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Worldwide Report

TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

No. 203

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CONTENTS

ASIA

INTER-ASIAN AFFAIRS

Briefs

India-Sri Lanka Microwave Link 1

INDIA

More Details on Telecom Panel Report Given
(THE HINDU, 6 Jan 82) 2

Official Reports Telegraph Services in Bad Shape
(THE SUNDAY STATESMAN, 3 Jan 82) 3

Briefs

Delhi-Calcutta Microwave Link 4

NEW ZEALAND

Single Sideband Marine Radio Communications Criticized
(THE EVENING POST, 17 Dec 81, THE PRESS, 19 Dec 81) 5

Boatmen's Safety Endangered
VHF Repeater Established

PAKISTAN

First Satellite Launch Set for 1986
(BUSINESS RECORDER, 27 Jan 82) 7

Briefs

Satellite Antenna Under Repair 8
Radio Station at Faisalabad 8

VIETNAM

Cable Radio Network Described
(BANGKOK POST, 27 Jan 82) 9

LATIN AMERICA

BARBADOS

Briefs

Phone System Expansion 11

BRAZIL

Satellite Purchase Policy, Submission of Bids Discussed
(JORNAL DO BRASIL, 27 Dec 81, O ESTADO DE SAO PAULO,
16 Jan 82) 12

Satellite Policy
Satellite Choice Imminent
Two Offers Received

GRENADA

Phone Company Plans Communications Improvements Island-Wide
(Vivian Philbert; FREE WEST INDIAN, 9 Jan 82) 23

SUB-SAHARAN AFRICA

INTER-AFRICAN AFFAIRS

Briefs

'PANA' Agreement Signed 25

SOUTH AFRICA

Briefs

Right To Intercept Communications 26

ZAMBIA

Briefs

TV Starts in Mongo District 27
Microwave Link Underway 27

USSR

New Standard on Signals, Procedures for Interconnection of Telegraph Exchanges
(V. N. Vrazhnov; VESTNIK SVYAZI, Sep 81) 28

Optical Communications Cables
(I. P. Maslenkova; VESTNIK SVYAZI, Sep 81) 35

WEST EUROPE

DENMARK

Government Agency, Firms Cooperate in Teledata Test
(Per Sabroe; BERLINGSKE TIDENDE, 11 Jan 82) 36

Local Citizens Groups Organize To Operate Local Broadcasting
(Solveig Basse; BERLINGSKE TIDENDE, 11 Jan 82) 38

Cultural Affairs Minister: Local Broadcasting Will Start
(Solveig Basse; BERLINGSKE TIDENDE, 17 Jan 82) 41

Phone Company Chief Discusses Digital Technology, Exports
(R. V. Relsted Interview; MANEDS BORSEN, Jan 82) 43

NETHERLANDS

Briefs

Participation in Communication Satellite Program 50

SWEDEN

LM Ericsson Introducing New Telecommunications Products
(Johan Myrsten; SVENSKA DAGBLADET, 12 Jan 82) 51

Briefs

Local Radio Broadcasting Qualifications 56

BRIEFS

INDIA-SRI LANKA MICROWAVE LINK--A new wide-band microwave communication link between India and Sri Lanka became operational on Monday, reports UNI. Communications Minister C M Stephen spoke to Mr D B Wajetunge, Sri Lanka Minister of Ports and Communication through the new link, which would provide stable and adequate trunk circuits. The project is an important landmark not only for tele-communication between India and Sri Lanka but also for the development of regional telecommunication network in South and South East Asia. Both the Ministers agreed that the communication facilities between the two countries should be expanded further. The link initially provides 48 circuits between Colombo and Madras and 12 circuits between Colombo and Bombay. Additional capacity will be added as and when the traffic grows. The microwave system from Rameswaram to Colombo and from Manner to Jaffna in Sri Lanka has been set up by the Government of India meeting the full cost of about Rs 4 crores. The Indian Telephone Industries Limited, Bangalore, supplied most of the equipment for the project. A few items were imported and supplied to Sri Lanka. Subscriber Trunk Dialling between the two countries through the new link will be established later. [New Delhi PATRIOT in English 19 Jan 82 p 8]

CSO: 5500/7074

MORE DETAILS ON TELECOM PANEL REPORT GIVEN

Madras THE HINDU in English 6 Jan 82 p 10

[Text] Hyderabad has been recommended for the location of a separate telecommunications research and development establishment, exclusively for matters relating to modernising of designs and production of telecommunication towers, cable lines and wires and accessories.

The high-power committee on telecommunications, set up under the chairmanship of Mr. H. C. Sarin, has, in its sixth report, pointed out that this part of the R and D should be separated from the responsibilities of the Telecommunications Research Centre (TRC) of the Communications Ministry. The new establishment should report directly to the P and T Board.

Pricing system: Though the report is devoted largely to telecom R and D and strengthening of the TRC, it also examines in detail the present pricing system for the equipment and stores sold to the P and T by the Indian Telephone Industries Ltd., Hindustan Cables Ltd. and other telecom units and has made a number of recommendations.

The committee feels the commission of eight per cent of the actual cost now being given to the ITI (net of price plus freight, insurance, customs duties, sales tax, etc.) is "quite high".

"Since all actual costs are covered, there is no reason why the commission should be more than two or three per cent where no acceptance testing is involved and five per cent where such testing is involved. In any case, this should not be a source of subsidising the working results of the ITI."

Cost on the basis of standards: At the same time, the committee says the present system of pricing "does not provide incentives for efficiency and operational improvements" whether it be ITI or the Hindustan Cables Ltd.

"Whereas in a monopoly situation, it will not be possible to have a competitive pricing system, the attempt should be, as far as possible, to fix costs on the basis of standards. The standards should themselves be realistic, derived both from data used while studying project economics and on practical experience but without accepting low levels of efficiency."

Noting the fact that the interest on the ITI's working capital is now met by the Government, the committee points out, "This again detracts from the principle that the working results of a production undertaking should be reflected in its own costs and profits and losses".

It recommends that standards should be set both for direct costs and overheads and prices fixed on that basis so that there will be no need directly to subsidise interest on the working capital. "Otherwise it will take away the incentive from the management to keep the working capital as low as possible consistent with efficient operations."

Lack of facilities: While acknowledging the good record of the TRC ever since it was set up in 1956, the committee, however, points out that both the ITI and the TRC have been unable to handle a number of useful and necessary projects on account of inadequate build-up of R and D managers and staff, lack of infrastructure facilities like prototype shops, computers and computer-aided design facilities, adoption of procedures unsuitable for R and D organisation in respect of personnel policies, project sanctions, procurement, import clearance etc., phenomenal advances in digital switching and transmission systems.

Should be organised: "The TRC has, therefore, to be organised and staffed to enable these functions to be handled efficiently without disturbing or slowing down the principal task of designing new equipment for indigenous production."

Fixing responsibility: The committee recommends that a member of the P and T Board should be made responsible for all matters related to the management of technology, namely, policy, coordination and control of R and D, quality assurance, engineering standards and instructions laying down technical specifications etc.

Explaining the need for this, it says the role of the TRC Director, who is looking after this task at present, is limited to expressing his views from time to time on his own initiative or in response to queries from the planning or operations branches of the department.

The TRC Director should be given some independent financial and administrative powers so that the P and T Board is freed from direct involvement in the routine functioning of the R and D establishment. The Director should have the same delegated financial powers as head of a telecom circle.

CSO: 5500/7073

OFFICIAL REPORTS TELEGRAPH SERVICES IN BAD SHAPE

Calcutta THE SUNDAY STATESMAN in English 3 Jan 82 p 3

[Text] MR S. K. Ghose, Secretary, Union Ministry of Communications, said in Calcutta on Thursday that the telegraph services in the country were in a "really bad shape". He said that the efforts were being made to reach a telegram within three hours of booking to places connected by direct tele-link, by the next four years.

Mr Ghose said that work at many telegraph offices had been affected because of a sustained agitation by some employees over certain demands. He said that there was a stage when the Posts and Telegraphs authorities had to send telegrams by ordinary mail. He said that the Union Government was determined to bring the services to normal within a short time.

The Union Communication Secretary was commenting on the experiences of some journalists who had gone to cover the Prime Minister's recent visit to Santiniketan and Farakka. The Posts and Telegraphs Department had installed special Press telegram' services from there to Calcutta and Delhi But all the urgent Press telegrams took almost 24 hours to reach Calcutta.

Regarding Calcutta Telephones, Mr Ghose said that the services were slowly improving. He said that the biggest malady from which the city telephone services had been suffering was the large-scale damage to underground cables because of extensive digging operations by different development agencies. He said that nearly 70% cable faults occurred because of such indiscriminate digging.

Another reason, according to him, responsible for faulty telephone services was the "absence of cabinets and pillars" required for proper functioning of a telephone cable network. He said that the Task Force was at work to provide 800 "cabinets and pillars" by March 1984 to cover the entire city. Mr Ghose claimed that the telephone services in Calcutta would surely be improved by the next three years. At present, a little over 11.000 telephones in the city were out of order, according to Mr M. P. Agarwala, General Manager, Calcutta Telephones. He said that normally the number should not be over 2.500 on any day.

CSO: 5500/7071

INDIA

BRIEFS

DELHI-CALCUTTA MICROWAVE LINK--The Union Minister for Information and Broadcasting, Mr Vasant Sathe, told reporters at Calcutta airport on Saturday that the microwave link between Calcutta and Delhi would be set up by June this year. More programmes would be telecast from the Calcutta television centre after the link was set up. The Burrabazar district committee of the Youth Congress (I) and the Chhatra Parishad (I) handed over a memorandum to the Minister, alleging discrimination in the telecasting of political news items. Mr Sathe will preside over the inaugural ceremony of Filmstar '82 in the city on Sunday. [Calcutta THE SUNDAY STATESMAN in English 3 Jan 82 p 12]

CSO: 5500/7072

SINGLE SIDEBAND MARINE RADIO COMMUNICATIONS CRITICIZED

Boatmen's Safety Endangered

Wellington THE EVENING POST in English 17 Dec 81 p 2

[Text] New Zealand's ratification of the international agreement to use single side band marine radio communications from next January would pose problems for boat owners, according to the New Zealand Water Safety Council.

Double side band radio, which was previously used, was within the means of most pleasure boat owners, Mr Doug Barron, chairman of the council said in a statement. But, the SSB equipment was expensive.

"Boaties cruising coastal waters are likely to replace obsolete DSB with VHF/FM or possibly CB radio which has a very limited use for marine purposes," said Mr Barron.

"This poses a new problem. VHF provides only a line-of-sight transmission. To reproduce its signal over longer distances requires relay or repeater stations placed at strategic points."

The Post Office has financed repeater stations at Wellington, Auckland and Tauranga making VHF a viable alternative to SSB in those areas, but would seem to have no further commitments in this field in the immediate future, said Mr Barron.

"The Water Safety Council considers this to be a serious indictment of a government department which has funds at its disposal yet chooses not to use them on a project that could well save New Zealanders from drowning," he said.

Next year users of existing DSB radios would be strictly limited to emergency calls.

VHF Repeater Established

Christchurch THE PRESS in English 19 Dec 81 p 6

[Text] A possible world first in marine radio may help save the lives of Canterbury "boaties" next year, with the establishment of a VHF repeater on Banks Peninsula.

Iroquois helicopters will fly a 4550-litre concrete tank and two 12m telegraph poles to the summit of Herbert Peak today for the $10,000 facility which the Lyttelton Marine VHF Association hopes to have working at the end of January.

Members of the Banks Peninsula Cruising Club and the Lyttelton Volunteer

Coastguard have offered to install the modified radio hut and aerial masts for the talk-through repeater.

The association's chairman, Dr Keith Drayton, said that VHF would provide an affordable means of communication for small-boat owners. A hand-held VHF set would cost $400 to $500.

"It is certainly the first two-frequency repeater on the marine band in New Zealand and probably in the world," he said.

Improved communication would prevent the loss of lives. A man drowned from his trailer-sailer off the Lyttelton Heads a few days ago could have been saved if he had had a radio on board, said Dr Drayton.

At present, boat-owners faced a dilemma with double side band radio made obsolete under a Post Office international agreement. Many could not afford to buy single side band replacement sets which cost up to $2500 a craft.

But a group of small-craft owners had persuaded the Post Office to grant a licence for the repeater which could provide a 24-hour automatic service. The solar-powered system gave small craft a search and rescue communications range from 320 to 480km around Banks Peninsula.

CSO: 5500/9024

PAKISTAN

FIRST SATELLITE LAUNCH SET FOR 1986

Karachi BUSINESS RECORDER in English 27 Jan 82 p 1

[Text]

Pakistan is planning to have its first ever national communication satellite in operation in 1986.

Official sources said yesterday that the satellite costing 150 million dollars (130 million dollars in foreign exchange) will be set up at a height of 22,300 miles and would be able to see one third of the globe.

Feasibility studies for the launching of the satellite are now in an advanced stage and negotiations were underway with some foreign agencies for technical collaboration.

The satellite, these sources said, will act as a relay station and provide additional facility for international communications on a regional basis besides meeting national needs.

It will also provide a nationwide television and telephone link up every village and town in the country will be linked directly with the satellite.

TEN-YEAR PLAN

The launching of the satellite forms part of the 10-year programme of Pakistan Space and Upper Atmosphere Research Commission (SUPARCO).

These sources said the programme will be formally approved by the Space Research Council, the highest planning body in the country at a meeting to be held next month under the chairmanship of President Gen Mohammed Zia-ul-Haq.

The programme spread over three phases, envisages application of satellite for communications, TV broadcasting, earth resources survey, scientific studies, acquiring capability to sight and track satellites and to launch and operate a national communications satellite.

CSO: 5500/5664

BRIEFS

SATELLITE ANTENNA UNDER REPAIR--Islamabad, Jan 28--Pakistan Telegraph and Telephone Department has notified for the information of all concerned that the Standard-A satellite earth station at Dehmandro, Karachi, is under-going major modification work on its antenna and feed sub-system with effect from Jan 4 1982, and will last approximately for a period of six-week i.e. till Feb 10, 1982. In order to maintain uninterrupted overseas telecommunication service (telephone, telegraph, telex, data), a standard-B earth station has been procured and installed at Dehmandro, Karachi, under contingency plan. Because of the smaller size of antenna, quality of service will be slightly degraded, but it would not be felt by users. However, during the period of retrofitting work, the transmission of overseas TV programmes through satellites will not be possible. During this period, Pakistan Telegraph and Telephone Department will not be in a position to make any commitment for the transmission of overseas TV programmes through satellite which may be necessitated on such coinciding occasions like the visit of a foreign dignitary to Pakistan an international conference, meeting or a major sports event taking place in Pakistan. [Karachi DAWN in English 29 Jan 82 p 7]

RADIO STATION AT FAISALABAD--The proposal to establish a radio station at Faisalabad has been approved by the Government. This was disclosed here by the Deputy Commissioner, Ch. Abdul Waheed, at a public meeting. The site for the proposed radio station, he said, would be selected very soon. The local administration has also been asked to make arrangements for residential quarters for the Pakistan Broadcasting Corporation's employees. If all goes well, Faisalabad will be on the air by the end of this year. [Lahore VIEWPOINT in English 14 Jan 82 p 14]

CSO: 5500/5667

CABLE RADIO NETWORK DESCRIBED

Bangkok BANGKOK POST in English 27 Jan 82 p 4

[Text] WHILE some countries weigh the likely effects of cable television, Vietnam is trying to extend its cable radio network.

Started in 1956 after the war against the French, the network now covers the whole of North Vietnam. Nearly every house has its set, linked through a village or commune centre to one of 80 local receiving stations, over which comes news, propaganda, music, early morning exercise classes, drama, instructions and advice.

A strong local flavour is given by the commune relay which adds its own programming to the centrally-produced material. In some places, reports and requests by the village committees are relayed over a telephone linked to the cable, to the district party or cooperative headquarters.

Ly Van Sau, director of the service, claims that North Vietnam's recent good harvest is proof of the network's effectiveness. New methods of cultivation were used, farmers following instructions given over the cable, and yields rose significantly, he says.

Brave New World?

North Vietnam is certainly not Huxley's vision: Most of its 30 million people are clumped in villages of 3,000 to 5,000 each, throughout the rich plain of the Red River and into the hills beyond. With few good roads or telephones in most parts, radio becomes a vital link.

The cable costs almost nothing to the villager; on the other hand, transistor batteries are scarce and expensive, and often the only way to obtain them is to register the set with the commune, which controls supplies. Television sets (about a million throughout the country) must also be registered.

Radio has been part of Vietnamese life since it was started in the jungle over 30 years ago. Mr Sau was there.

"We had two elephants and we used to load up the transmitter every morning and move. The French never found us. Afterwards the elephants got a medal."

Radio Vietnam has been off the air for only nine minutes since then — on Christmas Eve 1972, during the US bombing of Hanoi.

Cable was adopted as a low-cost alternative to a "wireless" system under which every family would have had to buy its own radio. Plans for expansion include extending the service to the southern provinces and more programming.

A new unit has been set up to produce programmes on agriculture, health and family planning with the help of the United Nations Children's Fund (UNICEF) and the United Nations Fund for Population Activities (UNFPA). The unit will shortly set up shop in Ho Chi Minh City and expand its present offices in Hanoi. With UNFPA help, 30 trainees spent three months at the Development Training and Communications Planning Centre in Bangkok.

But all is not roses. In a commune near Hanoi, the announcer proudly put on a scratchy record, saying: "Everyone is hearing this," and took us to a solid brick-built house nearby. No sound. The solid citizen had disconnected his set because it interfered with his nightly television-watching. By the time he hooked it up again, the electricity had failed.

Television will not be a big force in Vietnam for some time yet. It airs for only two hours in the evening, from 7 p.m. to 9 p.m., and the most popular programmes are sports, beamed by satellite from the USSR or Eastern Europe. The local programming, especially drama, professionally acted and produced, suffers from poor facilities — Hanoi's television studios are housed in a converted rice warehouse — and a melange of equipment from all over the world.

"Good politically," we were told in an aside. "Bad technically." Shortage of spare parts means home repairs, but everything in a video-tape recorder, for example, can be fixed except the recording head. Colour television is on the way — there is a fully-equipped colour studio — but so far colour is used only for training of "cadres."

So the short-term future is with cable radio.

"We have lots of problems," says Ly Van Sau cheerfully, "like loss of power, old equipment. Communes in the south are not yet fully organised. But I think the chief problem in expanding the cable network is finding enough cable."

CSO: 5500/5673

BRIEFS

PHONE SYSTEM EXPANSION--Some $21 million will be spent on the expansion of telephone services in Barbados this year. This was disclosed yesterday by the Barbados Telephone Company's general manager, Charles Evelyn. Noted as the largest construction programme since the inception of the company in 1903, Evelyn said the expansion was an effort to meet the requirements of a massive invasion of customers. The projects, which are expected to be completed between May and June this year, will include the extension of additional building facilities. They are St. John, St. Philip and St. James to accommodate some 500 more lines, Christ Church--2 500 lines and the company's Windsor Lodge headquarters, over 2 000 lines. Pointing out that the additional facilities were an attempt to meet the anticipated growth of customers in 1982, Evelyn stated that more telephones were installed last year than ever in the company's history. Reflecting on the company's performances last year, Evelyn described 1981 as "tough". He said: "Business has been too good for us with the growth faster than we could handle, and therefore we appeared not to accomplish what we set out to do." The Telephone Company's general manager also listed last year's abnormal weather conditions as another reason for a setback in operations. [Bridgetown THE NATION in English 6 Jan 82 p 1]

CSO: 5500/7517

SATELLITE PURCHASE POLICY, SUBMISSION OF BIDS DISCUSSED

Satellite Policy

Rio de Janeiro JORNAL DO BRASIL in Portuguese 27 Dec 81 p 2 of special supplement

[Text] The main characteristic of the bidding announced by Brazil for the purchase of a communications satellite is seen within the context of the national policy on the negotiations, exceeding the pure service level. EMBRATEL [Brazilian Telecommunications Company], as the enterprise holding a monopoly on public telecommunications facilities, is purchasing the system, but the government is demanding a transfer of technology, an export counterpart, and certain financing conditions.

Therefore, the private U. S. firms Hughes and Ford decided not to bid separately, but are doing so in affiliation with the Canadian Spar and the French, Aerospatiale firms, respectively. In the final analysis, they will not be in a position to offer export counterparts or to offer government supported financing conditions.

These explanations were provided by the secretary general of the Ministry of Communications, Romulo Villar Furtado, who has followed the domestic communications satellite issue for years. In his view, "the best possible purchase will be made and the advantage will be reflected in the country's trade balance."

The fact is that this purchase reveals special aspects of the Brazilian economic system. EMBRATEL, an enterprise, establishes specifications, purchases and pays for and uses the satellite, but the negotiations and the final decision fall to the Ministry of Communications, which sets the terms. This is in fact a transaction on the government level. Mr Romulo Villar Furtado gives assurance that the technological level is guaranteed, adding the following:

"The required transfer of technology and export counterpart I would agree might represent an additional burden which would perhaps be excluded were it not compulsory. But this is a question of government policy. If an additional burden is required, we will go along with it.

"We have introduced this in product nationalization policies and all the rest, where the people pay more for the product. If it were otherwise I would not have established a computer equipment industry in Brazil, making purchases instead on the international market, which is cheaper. However, I am buying Brazilian and paying more, but I am providing Brazilian personnel with jobs."

Lengthy Negotiations

The purchase of a communications satellite has been an issue in government political discussion for some years. In 1977, international bidding was even initiated, but it was decided in the end that such a transaction was not of interest. One of the negotiators at that time was Mr Romulo Furtado.

"One of the reasons I favored postponement of the program was that although it was of limited economic importance from the point of view of expenditures, nonetheless these were dollar expenditures. Secondly, at that time, the conditions for the transfer of technology to Brazil in the satellite field were not the same as at present--they were worse.

"At the time, it was said that it is better for people to use land networks to do what the satellite could, even if the cost was higher, since we control the land networks--they are products developed in Brazil and produced right here. This was true, but it no longer is today. The earth stations, which account for a substantial part of the program, are now developed and produced in Brazil.

"In 1976, satellite critics still said that as we had to use technology which was not our own, we would always be at the mercy of third persons. This then could have been strategically undesirable for Brazil.

"But in 5 years' time the government changed its thinking. On 10 February of this year, the president of the republic, after a favorable recommendation by the SEPLAN [Planning Secretariat], authorized the purchase of a satellite. With a final cost proposal of about a million dollars, the Ministry of Communications decided to solicit pre-bids this time, with Aerospatiali and Matra, French firms, Ford Aerospace and Hughes, in the United States, and Spar, in Canada, in the running.

"The preliminary bids were to be submitted by 30 October and the best two were to be selected," Romulo Furtado explained. "But the French government informed us that it had decided not to compete with Matra. Later on, we were informed that Aerospatiali and Ford would submit a joint bid. Then we received news of an identical decision by Hughes and Ford. On 30 October I received two preliminary bids: I declared them preselected and immediately asked that the final bids be submitted by 15 January 1982.

"Our priority is without a doubt to guarantee identical technological conditions. The next consideration is better price and financing conditions. Thirdly, we want better conditions for the transfer of technology, and fourthly, balanced commercial trade. But we have no reason to fear any kind of technical difficulties, because to speak the truth we are dealing with two enterprises with long traditions--Hughes and Ford."

The bids will be examined first by a commission within the Ministry of Communications headed by Mr Romulo Furtado and two representatives of EMBRATEL. This commission will draft the report to be submitted to the interministerial commission concerned with the matter, which will study such aspects as financing and export counterparts (at least on a one-to-one dollar basis). The final decision will be made by the Ministry of Communications.

A Viable Transaction

Mr Romulo Furtado, as seems to be the case with all of the technicians in the sector, believes that the communications satellite is a wise venture. He says that the entire system is estimated at 200 million dollars (launching, land system, reserve satellites, everything), and he commented as follows:

"Well then, in the year 1981 alone, the telecommunications sector is investing $1,200,000,000. Now what is 200 million dollars, financed over 10 years, compared with this? It represents an annual expenditure, we must acknowledge, of 20 million dollars. On the other hand, 200 million dollars would pay for the cost of establishing 50,000 telephone terminals, with exchanges, civil construction projects, and the network. And this year alone we are putting in 700,000 terminals.

"Another important aspect has to do with the fact that this satellite will replace the rental sums we are paying today, because we do have a satellite communications system in Brazil. We have stations in the Amazon region which are now using the transponder rented from INTELSAT [International Telecommunications Satellite Organization], costing about 3 million dollars a year. According to our conservative estimates, the rent will be about 16 million dollars per year by 1990.

"As to technology, the transfer of 'internal satellite electronics' and the stabilization and other systems in the realm of command and control, are of interest. The satellite will be constantly under the command and control of an earth station, and Brazil is in a position to absorb this technology fully. As to the land communications station, we already have mastery of all of this technology."

Lengthy Experience

The French attribute great importance to the possible purchase of a satellite telecommunications program by Brazil. Persuaded of the technological superiority of their present offer in the aerospace field as compared to that of the Canadian competitor, Spar, they seem equally ready to make an effort to meet the payment and "compensation" conditions demanded by the government in Brasilia.

In the bidding solicited last year by 22 nations in the Arab league, the National Aerospace Industry Company (Aerospatiale) was awarded the bid, and on 25 May last, its director, Mr Jacques Mitterrand, the brother of the president of France, signed [illegible] contract for the supply--jointly with the U. S. Ford firm--of three satellites [illegible] be launched beginning at the end of 1983, for a sum of 130,350,000 dollars.

The French trumps are mainly technological. The Aerospatiale-Ford satellite is stabilized on three axes, while the Spar-Hughes system is stabilized by rotation. The advantage of the three axes satellite lies in the fact that it always exposes the same aspect to the sun, and therefore only one-third as many solar cells are needed to produce the same energy. It also provides a substantial economy in weight.

As a second advantage, the Franco-American model has what is called a unified propulsion system, newer than the other systems, and of superiority currently acknowledged by all, although it has not yet been utilized in practice.

This sophisticated satellite, which benefits from the most modern technological resources in the field, which was offered by Aerospatiale to Ford and to Thomson, has one undeniable advantage over the Canadian model: it weighs less. But it has a disadvantage in that it is still experimental, while its counterpart has been in use for years. "This is a tested product with no surprises. All of its forms of operation are known, and this represents an advantage," a French expert acknowledges. One cannot however overlook the importance of the experience of Aerospatiale, which, if the project is carried through, will be in charge thereof.

In fact, being the leading European builder in the space and aeronautic field, this French enterprise already has 20 years experience and has participated in 20 satellite programs, either in charge of work or affiliated with it. These include the recent and important INTELSAT V project. Aerospatiale currently has 21 firm orders for satellites, and 16 others on an optional basis.

In addition to this, it has been working in close cooperation with Ford since 1967, which has obviously helped it in connection with industrial and trade competition. "Each partner has contributed its own experience," according to Mr Charles Bigot. "And although each party has its space technology complex, we share the designing of the various parts--as a function of our strong points, obviously--for obvious reasons of profitability." It is apparently on this basis that the Franco-American consortium has been able to win over the Indian, Australian and Arab markets (with different ownership ratios varying with the case: the French in some cases control the majority and in others a minority, generally as a function of political relations). Other markets are currently being actively solicited, for example those in Colombia, Argentina, Mexico--and obviously, Brazil.

There is another prior advantage which Aerospatiale has: to offset the lack of great operational experience, it does have very broad and sometimes very advanced scientific experience (and not just limited to communications technologies). In brief, it can deliver its satellites "in orbit," because it also has the Ariane launcher.

It should be said that the credibility of this rocket has just received its best guarantee certificate, since the Americans, little inclined to open up their market to foreigners when it comes to state of the art technology, have given it a vote of confidence. The GTE Corporation telephone group has in fact signed a 50 million dollar contract for the launching of two satellites by the Ariane-3 in 1984 to serve the domestic telephone network.

There still remains the overall plan of the agreement, the financial portion and the political-trade "atmosphere." In the final analysis, it may very well happen that all of these matters will be resolved, although both the French and the Canadians are saying little about their intentions on this matter, because they know that whichever can find the best arguments here will be the winner. The French for their part say that the prices of the two proposals should be substantially the same. As to the financing conditions, they will be established by the governments involved, with the banks serving only as tools for a decision on a higher level.

It is known that the new French government is firmly determined to establish closer trade links with Brazil. As far as is known, Aerospatiale is ready to put forth an effort to this end. And these efforts will also include a "change in proper procedures," leading to the import of new products from Brazil to France.

Concerning the equally sensitive question of the transfer of technology, again according to Aerospatiale, there should be no problem either. "We are prepared to consider any solution," Mr Charles Bigot said.

Advanced Technology

Canada, the third country in the world to join the "space club," with the launching of its first artificial satellite, the Alouette I, in September of 1962, believes that because of its long and varied experience in this sector and the similarity in terms of territorial dimensions and population density, it is in a position to offer Brazil the best domestic communications satellite system.

Another advantage noted by the Canadian negotiators is the readiness of their enterprises to undertake a real transfer of technology, such as to provide their Brazilian counterparts with mastery of the techniques and the equipment they will eventually purchase, adapted to the specific needs of the country. From the beginning, the goal of the Canadians' own space program was to achieve maximal nationalization under economically viable conditions. They have today achieved 50 percent self-sufficiency in terms of equipment volume, and 85 percent, in terms of the total value of the satellite.

In almost 20 years of activity, the Canadian space program, carried out with the cooperation of both domestic and foreign private industrial enterprises and government bodies, has already placed nine satellites in orbit. Four of them are for scientific research in the ionosphere and four are in Anik series for domestic communications on a commercial level, which is of the greatest interest to Brazil. In the coming year, that country plans to launch two more satellites within the Anik project.

The ninth satellite in orbit is the Hermes, the most powerful in the world in the communications sector. It was built in cooperation with the United States for a 2-year mission. Launched in January 1976, it was active until December 1979, being used by the two countries on alternate days.

The Canadians carried out 15 technical experiments and two of a social nature, for example medical conferences for patients in isolated regions with leading specialists in major centers (telemedicine), simultaneous Canadian and American university classes (tele-education), and integration of the French language minorities in various parts of the country. Unlike conventional educational television, this project allows immediate response to students' questions, the holding of discussions involving students and professors at various schools, and many other variations.

Brazil is particularly interested in the program known as Anik, which is an Eskimo word meaning brother. Space technology has enabled Canada to resolve one of its major difficulties in national integration--the lack of clear and frequent communications with the isolated populations in the region near the Artic. With the territory covering 9,850,000 square kilometers, the country has only 23 million inhabitants, concentrated mainly in the southern part. This demographic picture is similar to that in Brazil, as the Canadian negotiators have made a point of emphasizing.

Aware of the need to integrate their isolated communities and encouraged by the results achieved with the Alouette and Isis satellites for scientific research and their participation in the international INTELSAT program, the Canadian authorities created a mixed enterprise, Telesat Canada, in 1969. The government holds 50 percent of the shares, and the other partners include 13 Canadian telephone companies, some of which are private and some owned by the state. With the responsibility of installing and maintaining a domestic telecommunications system, Telesat is operating four satellites--three in the Anik A and one in the Anik B series--at present, and it has already signed a contract for the launching of Anik C and D. It also has a network of more than 100 earth stations.

The Anik A satellites are interchangeable, and each has a 12-microwave channel capacity. Together they cover the whole of Canadian territory. Each channel can carry a television program or 960 telephone circuits. The entire series was designed and built by Hughes Aircraft Company of California, with some components being manufactured by Spar Aerospace Products, Ltd., of Toronto, and the Northern Electric Company, Ltd. of Quebec.

In December of 1978, NASA launched Anik B, which was designed to replace Anik A I and II for Telesat.

Telesat plans to spend 400 million dollars during this decade on satellites in the Anik C series, three of which are to be launched between 1982 and 1984. The D series will replace the Anik A and B channels, as these cease to function. The Anik C and D satellites may be launched by NASA Delta rockets, or placed in orbit by recoverable shuttles of the Columbia type. Spar will produce the communications system for the Brazilian satellite, while Hughes will produce the "bus"--the structure, energy systems and engines.

Canada is also beginning to participate in space programs abroad. The most outstanding of these contributions to date has been the remote control system (mechanical arm) recently tested by the Columbia, the United States' recoverable shuttle. The mechanical arm, 15 meters long, was produced by Spar on a contract with NASA and the Canadian National Research Council, at a cost of 90 million dollars. In addition, Spar has also installed earth stations in 14 countries and supplied subsystems for 85 other stations.

New and Expanded Services

The domestic Brazilian communications satellite will expand some services and create new ones. It will be possible to nationalize public telecommunications services (telephone, telex, data, etc.,) and television, making use of the facilities for point-multipoint and multipoint-point links.

This same structure will make the domestic data transmission system, which is essential for modern banking systems, viable, using small antennae and private lines.

It will be possible to reach any point speedily, which will be of great value in the event of disaster and in terms of labor sites (such as hydroelectric projects or underwater oil prospecting platforms).

Mobility is of great strategic military value. Global coverage will speed up the completion of the SINDATTA, for flight safety and protection.

The new services will include long distance medical service, expansion of the tele-education systems, remote control operations and data gathering.

Justification for the Purchase

A series of factors led to the decision to buy a satellite this year.

The country now has an adequate technological base for the production of a series of types of equipment, as well as absorption of the operation of the land control systems.

An especially designed satellite will be much cheaper and more efficient. The INTELSAT rates are steadily rising because of demand.

Complete control of the system represents a great advance in terms of national security.

The cost is attractive. It is estimated that the two satellites (principle and reserve), the launching, earth systems, insurance--in a word everything--will come to 200 million dollars, financed over 10 years, with 3 years grace. The Ministry of Communications believes that ceasing to lease and the expansion of services will fully compensate for the investment (which is indeed very small within the TELEBRAS [Brazilian Telecommunications, Inc] context).

INTELSAT Satellites Used Since the '60s

INTELSAT was created in 1964 by 11 countries, and today has 106 affiliates. Its most recent report said that it carries out two-thirds of all the international telecommunications links, using several satellites.

Brazil is one of the oldest members of INTELSAT, and as of 1 March 1981, it ranked seventh in investment contributions (after the United States, the United Kingdom, France, the FRG, Australia and Japan).

Since the first antenna for international transmissions was installed in Tangua, Rio de Janeiro, Brazil has been developing land system technology. Today it is producing antennae and other systems.

In 1974, the TELEBRAS system began to use the satellite for domestic communications (television for Manaus and Cuiaba, during the World Cup matches). With the expansion of service, an antenna was built in Tangua for domestic communications exclusively.

Brazil Needs Satellites

Brazil has certain characteristics making the use of communications satellites necessary.

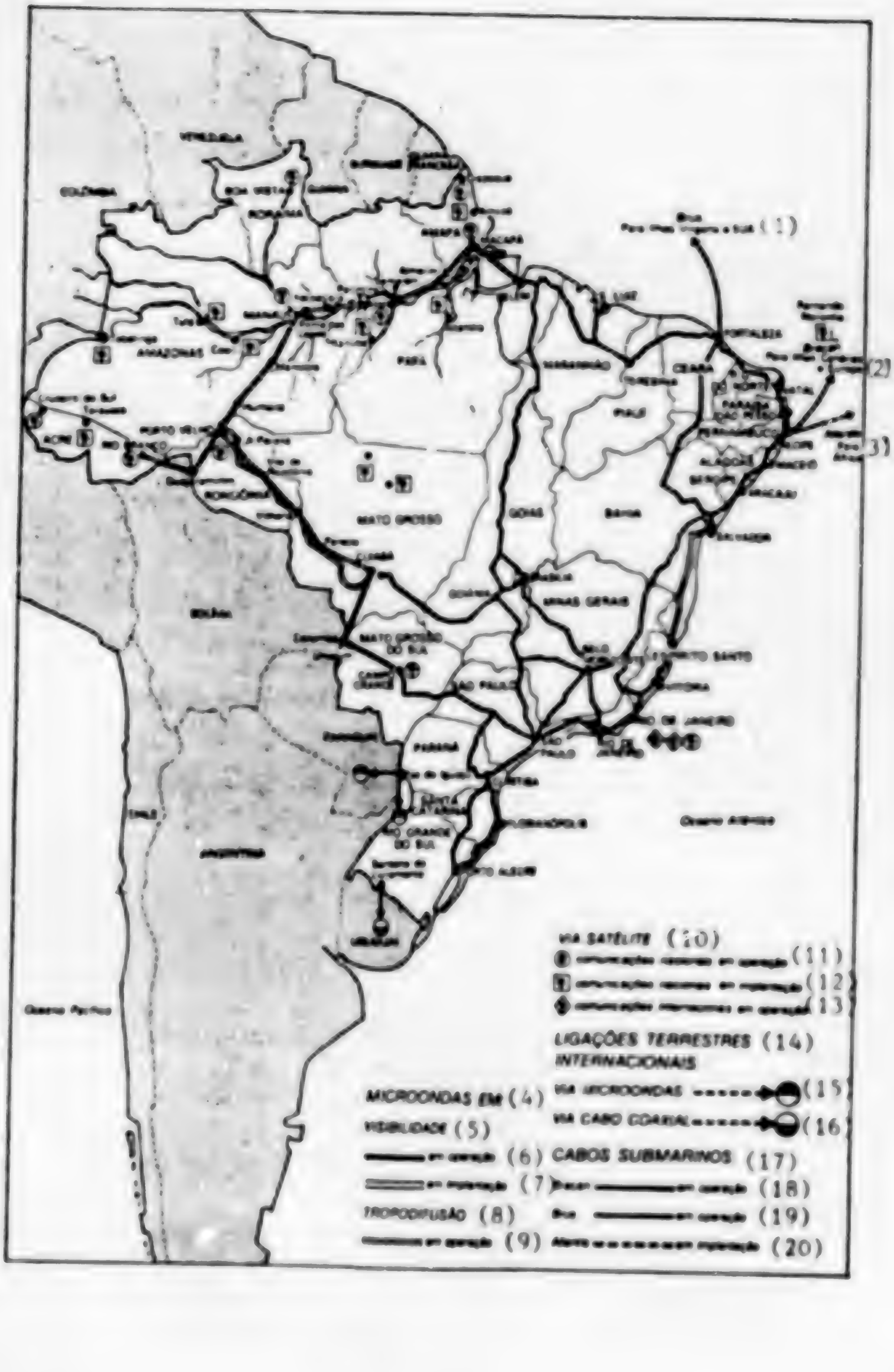
Its territorial dimensions are great. It has large areas which are difficult of access, such as the Amazon region, where it is very difficult to install or maintain conventional systems, with visible microwave trunk lines.

It has population centers scattered throughout vast areas, and also great urban concentrations (on the one hand, it is difficult and costly to serve the areas already equipped with conventional systems, and on the other, these systems are beginning to be saturated along the main traffic routes).

There is increasing demand for service and further demand will develop, much of it requiring high reliability and very wide transmission bands (as for television). Between Rio and Sao Paulo, for example, the visible microwave trunk lines are near saturation, and the installion of a coaxial cable is now under study.

Key to accompanying map:

(1) Brus--to the Virgin Islands and the United States
(2) Bracan--to the Canary Islands and Europe
(3) Atlantis--to Africa
(4) Microwaves
(5) Visible
(6) In operation
(7) Being installed
(8) Tropodiffused
(9) In operation
(10) Via satellite
(11) Domestic communications in operation
(12) Domestic communications being installed
(13) International communications being installed
(14) International land links
(15) Via microwave
(16) Via coaxial cable
(17) Submarine cables
(18) Bracan--in operation
(19) Brus--in operation
(20) Atlantis--being installed

VENEZUELA
COLÔMBIA
BOA VISTA
GUIANA
SURINAME
RORAIMA
(1)
FORTALEZA
CEARÁ
(2)
(3)
AMAZONAS
ACRE
PARÁ
MARANHÃO
PIAUÍ
ALAGOAS
SERGIPE
ARACAJU
SALVADOR
MATO GROSSO
GOIÁS
BAHIA
CUIABÁ
BOLÍVIA
MINAS GERAIS
MATO GROSSO DO SUL
ESPÍRITO SANTO
VITÓRIA
SÃO PAULO
RIO DE JANEIRO
PARANÁ
CURITIBA
SANTA CATARINA
FLORIANÓPOLIS
RIO GRANDE DO SUL
PORTO ALEGRE
CHILE
ARGENTINA
Oceano Atlântico
Oceano Pacífico
VIA SATÉLITE (10)
(11)
(12)
(13)
LIGAÇÕES TERRESTRES (14)
INTERNACIONAIS
VIA MICROONDAS (15)
VIA CABO COAXIAL (16)
MICROONDAS EM (4)
VISIBILIDADE (5)
em operação (6)
em implantação (7)
TROPODIFUSÃO (8)
em operação (9)
CABOS SUBMARINOS (17)
em operação (18)
em operação (19)
em implantação (20)

Satellite Choice Imminent

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 16 Jan 82 p 12

[Text] With the submission today of bids for the supply of the special portion of the Brazilian Satellite Telecommunications System (SBTS) by two international consortia--one Canadian and the other French, Brazil is in fact beginning to make the choice of its domestic satellite, which is scheduled to be in orbit during the first quarter of 1985, involving a total investment of 200 million dollars (about 25.8 billion cruzeiros), including only the cost of purchase and launching the two satellites, one of which will be held in reserve.

The winning consortium will be chosen within the next 60 days by the Ministry of Communications from bids which also cover the transfer of technology and additional financing advantages.

The Brazilian domestic satellite project calls for the coverage of every square meter of our national territory with service providing up to four simultaneous television programs, with the possibility of retransmission, along with more than 20,000 links for telephones, telex, telecopying and other services, including the transmission of data between computers.

At present, Brazil is spending almost 5 million dollars (about 645 million cruzeiros) per year to maintain its lease on only two retransmission systems from a reserve satellite in the NTELSAT system. With the SBTS, direct television images can be transmitted to any point in the country at lower cost.

The Brazilian satellite which may either be put in orbit by conventional rockets of the Delta type or by the new Ariane, or even by the special Space Shuttle Project (Columbia bus), will have a maximal capacity of 24,000 voice circuits, with two large rectangular antennae, one of them beamed toward Amazonia and the other toward the Tangua satellite communications center near Rio de Janeiro. This, at least, is what is proposed by France, which suggests coverage of practically all of Brazil's territory with these two antennae. The two satellites offered are precisely the same, and one of them will remain in operation while the other will be placed in orbit for eventual substitution purposes. The Canadian proposal does not differ greatly from that of France: the capacity is similar, but the satellite is cylindrical and turns on a main axis at 60 revolutions per minute.

As compared to the INTELSAT-V, the Brazilian satellite will be lighter and less sophisticated, but it will also have a substantial retransmission capacity. On this point, it will be the equivalent of the satellite of the Arab countries (Arabsat) and will even surpass the first two generations of Canadian domestic satellites.

A New Era

The use of communications via satellites on the domestic level may mean a new era for Brazil. The reliability of telecommunications will become a reality at every point in our national territory, and the land networks for television retransmission, which are today complex and costly, will be replaced by simple receiving antennae 3 meters in diameter, which will be cheaper and more efficient. In addition to this, it will be possible to establish small stations at any point in the country, even in the event of disaster, such as to establish immediate communications.

Theoretically, the domestic satellite--with that in use and that in reserve capable of 24 retransmissions each--can retransmit up to 48 television programs simultaneously, and newspapers can use it for transmitting photographs, facimiles and even whole pages for printing at various points in the country.

For the countries participating in the international bidding, the sale of a satellite to Brazil is a major issue. Therefore both Canada and France are making a point of offering additional advantages. For example, Canada is emphasizing the transfer of technology to Brazil, and France is promising to buy a larger quantity of Brazilian manufactured goods from Brazil during the period of the financing of the equipment, estimated at about 200 million dollars. There is one basic reason for all of these advantages offered--the importance of Brazil on the world market, since the party to whom our country awards the bid will enjoy great advantages in future Latin American bidding processes.

Two Offers Received

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 16 Jan 82 p 11

[Text] Brasilia--The two consortia bidding for the contract to install Brazil's domestic satellite--the Canadian Hughes-Spar group and the French Aerospatiale-Ford group--submitted their bids yesterday in Brasilia. They will be analyzed over the next 60 days by an interministerial team. The satellite is expected to be operational as of February 1985, covering the whole of our national territory.

Representatives of the Canadian consortium said that they have confidence in the bid they submitted. They noted that in December this group won out over a French consortium for the installation of a domestic satellite for Australia. One of the advantages offered by the Canadian proposal, the leaders of the consortium said, is its modern design, which has been well received in a number of countries.

Canada has had difficulties only in the launching of the space segment, but this aspect is not a part of the Brazilian government's requirements. The launching, according to the Hughes-Spar consortium officials, will be based on the choice of the client for one of two existing launching alternatives offered by the United States and Europe.

The French party in the Aerospatiale-Ford consortium said that the group has offered Brazil a bid which addresses the imports France would be committed to make from Brazil. This is one of the points which the commission analyzing these bids will take into account. An initial payment contract in the amount of 250 million dollars has already been signed, and plans call for the signing of others.

5157
CSO: 5500/2083

PHONE COMPANY PLANS COMMUNICATIONS IMPROVEMENTS ISLAND-WIDE

St Georges FREE WEST INDIAN in English 9 Jan 82 p 5

[Article by Vivian Philbert]

[Text] THERE was both good and bad news for telephone consumers this week as the Grenada Telephone Company (GTC) announced an increase in the quality of its service in the coming months and years, and an increase in the basic rates, effective from this month.

The company announced the doubling of its exchange line capacity, with the construction of new exchanges in St. George's, Morne Rouge, the sister isles of Carriacou and Petit Martinique, and St. David's, in addition to expanding its facilities in Grenville, Sauteurs, Gouyave and Westerhall.

Carriacou and Petit Martinique exchange lines will be linked to Grenada by radio, which will enable direct dialling into the Grenada system.

Meanwhile, four engineers from the company returned from training in the German Democratic Republic (GDR) recently.

The men were trained in the use of new equipment being supplied by the GDR. A building to house the new equipment will begin early this year.

With this consoling news, however, came news that residence line rates have increased from $32 to $38 per month, business line rates from $95 to $110, key system lines from $95 to $120 and PABX lines from $120 to $150 monthly.

GTC manager Ivor O'Brien has, however, promised a speedy improvement in the service whose present rate increase is bound to anger consumers temporarily.

Mr. O'Brien admitted that over the past years, GTC's service had deteriorated due to the inability to maintain proper maintenance stores because of the rapid increase in operational costs.

For St. Andrew's in particular, new lines have been bought and will be installed in the coming weeks, he said.

Noting that the price of gasolene had increased from $2.50 per gallon in 1978 to $5.55 last year and that telephone materials had increased by 25 per cent over the same period, he said that the last increase in the residence and business rates were in January 1978 and 1979.

Surprisingly, however, GTC is still making a profit, even though Mr. O'Brien says this has been falling since 1978 and the company still intends to make a profit this year. As usual, the consumers feel the brunt of the company's hardships.

At present, telephone privacy in Grenada especially in the parish of St. Andrew's has become something of the past.

One consumer in Grenville complained about not having her telephone working for a month despite repeated reports to the GTC, " "and to my great shock,' she said, "I heard on the radio that if consumers did not pay their bill by month-end, their phones will be disconnected. Well, I did not lose anything. I let them take it."

Contacting home in St. Andrew's from St. George's is a constant nagging problem. One can call the operator if her line is not busy, and ask her to put the call through. But the operator often answers, "The junction is busy."

The problem is even worse from St. Andrew's when one dials "0" to get out of the parish and gets no sound. One does not even have the opportunity of users in St. George's, to call the operator, whose number from the country areas is "00", and get the mere consolation that the junction is busy.

The new system, which will be installed by 1984, will place Grenada among countries in the world offering the most developed and modern telephone service.

Mr. O'Brien, however, pointed out that part of the problem will persist if hunters, especially in the country parts, continue to shoot manicou, a local rodent regarded as a delicacy on the telephone cables. Many cables have been damaged in the process, he said.

CSO: 5500/7518

BRIEFS

PANA AGREEMENT SIGNED--The agreement creating the PAN-AFRICAN NEWS AGENCY, PANA, enters into force today. It must be signed by 16 countries to be effective. This has now been done: Guinea-Bissau, represented by a (?minister), has ratified the agreement at the PANA headquarters in Dakar. During this ceremony, PANA's director Mr Diallo recalled that the agency has been declared a priority project in the system of world communications. This declaration was made during the meeting of the international program for the development of telecommunications held in Puerto Rico under UNESCO patronage. A [word indistinct] million CFA-franc aid has been granted to PANA. According to Mr Diallo, PANA is to receive an aid of 96 million CFA francs from the UN Development Program and another 600 million CFA francs from the Arab countries of the Gulf for the project of an integrated telecommunications network. This project, which will be realized with the assistance of the International Tele-Communications Union, is estimated to cost $750 million. [Text] [AB051200 Dakar Domestic Service in French 2200 GMT 4 Feb 82]

CSO: 5500/5672

BRIEFS

RIGHT TO INTERCEPT COMMUNICATIONS--The [Steyn] commission recommends that the Ministers responsible for the three security services of National Intelligence, the police, and the Defence Force should decide wheter interception is essential, and not an officer delegated by the Minister of Posts and Telecommunications, as is presently the case. In urgent cases, if the Minister concerned is unavailable, the commission recommends that he authorises some other person to take the necessary decisions. Such interceptions sould be permitted for a maximum of six months at a time, after which a further interception should be considered anew.--Sapa. The commission recommended the replacement of the existing law governing the interception of telephone calls by a provision allowing the interception of all telecommunications. It also recommends that the interception of communications to and from a particular telephone number be permitted. According to its report the interception of post and telephone calls is essential for the protection of State security, but as this may be a serious invasion of individual privacy, it should be done with great care and responsibility. [Text] [Johannesburg THE CITIZEN 4 Feb 82 p 13]

CSO: 5500/5670

BRIEFS

TV STARTS IN MONGO DISTRICT--Permanent Secretary in National Information and Broadcasting, Mr Edward Lubinda, confirmed in Lusaka today that the Mongo relay started (?viewing) television last weekend following the installation of a television transmitter in the district. Mr Lubinda said the transmitter that has been installed in Mongo was a temporary one and will be replaced by the new one which is already been [word indistinct] from Britain. A spokesman for the television engineers in Mongo said [words indistinct] other spare parts to make [word indistinct] better. [Text] [LD031523 Lusaka Domestic Service in English 1800 GMT 2 Feb 82]

MICROWAVE LINK UNDERWAY--The Posts and Telecommunications Corporation has started negotiations with a Norwegian firm on the construction of a microwave link to the North-Western Province. A spokesman for PTC said in a statement released in Ndola that negotiations with Nera company started a week ago and have not yet been completed. Nera has been awarded the contract to manufacture, supply and instal the microwave link. Because of the size of the project it will take sometime for the negotiations to be finalised. The cost of the project and the amount of work involved as well as the schedule of work is not yet known. Last month there was a storm at a North-Western Province provincial development council meeting when it was learnt that K7.5 million West German loan intended for the microwave link was diverted to the Eastern Province. But acting permanent secretary in the Ministry of Power, Transport and Communications Mr Dingelizwe Chipeta said the ministry was not aware of the transfer of the money. [Text] [Lusaka TIMES OF ZAMBIA in English 28 Jan 82 p 5]

CSO: 5500/5669

NEW STANDARD ON SIGNALS, PROCEDURES FOR INTERCONNECTION OF TELEGRAPH EXCHANGES

Moscow VESTNIK SVYAZI in Russian No 9, Sep 81 pp 24-26

[Article by V. N. Vrazhnov, KONIIS [Kiev Branch of the Central Scientific Research Institute of Communications] laboratory directory, L. D. Romantsova, deputy director of the GTU[Central Telegraph Administration] of the USSR Ministry of Communications]

[Text] The performance quality of automated telegraph networks of direct connection (PS), subscriber telegraph (AT) and low-speed data transmission (PD-200) greatly depends on maintaining interconnection signaling between switching stations and also between stations and substations during establishment of connections. PS and PD-200 networks practically completely, and the AT network in part, are equipped with switching equipment of a coordinate system, by AT-PS-PD stations, "Nikola Tesla" type R and D (abbreviated NT-R and NT-D), APS-K, ATA-K, by the substations PTS-K, ATK-PD, ATK-20, ATK-20U, and ATA-MK-2. The interconnection methods of this equipment are constructed on the general principles mentioned in Recommendations of Series U of MKKTT [International Telegraph and Telephone Consultative Committee] and known as type B signaling. However, during the specific implementation of these principles for interconnection of different stations (substations) there is a set of interconnection versions which depend on the direction of a call, the type of channel utilization (common or separate), the transmission method of category and subscriber number (decimal or telegraph code) and other factors.

A new state standard GOST 24001-80 "Coordinate type telegraph switching stations (substations). Interconnection signals and procedures between stations (substations) for establishing connections in the AT-50, PD-200, and PS networks." which was developed by KONIIS with the cooperation of VEF plant became effective on 1 Jul 1981. Its purpose is to order the interconnection signaling and create the basis for future technological improvement of the operational and engineering maintenance of telegraph switching networks. This article will examine the principal features of standardization of interconnection signals and procedures in accordance with GOST 24001-80 and the considerations which must be made in order to observe the new standards.

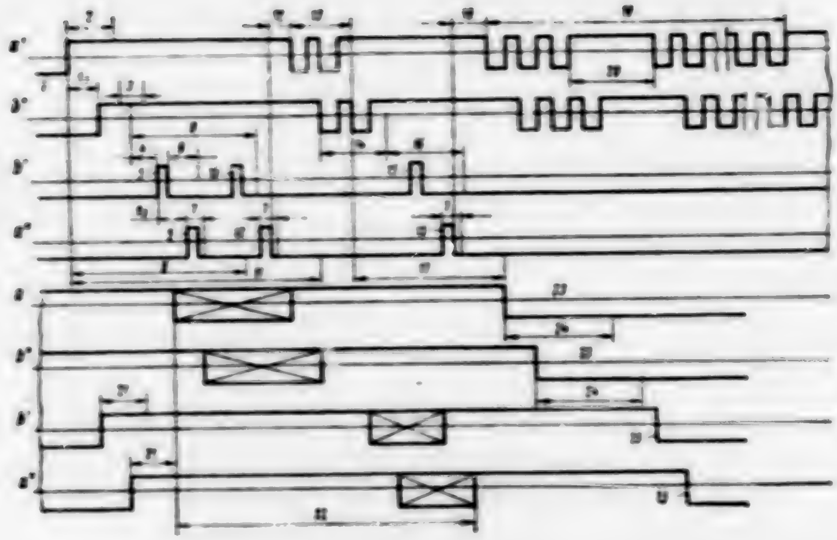
The figure gives signal diagrams which characterize the general principles of interconnection of any two stations (substations) when making connections in PS, AT and PD-200 networks. For brevity of exposition, the station (substation) which initiates the call, i.e. the caller, will be designated as station A, and the points of its connection to the telegraph channel which form the intersta- tion segment (MU), by points a' (transmit circuit) and a" (receive circuit). By analogy the called station (substation) will be named station B, and the interface points, b' and b". Note that the described interconnection principles do not depend on how many stations take part in making a switched connection to station up to station A and after station B, i.e. on whether stations A and B are through or terminal.

According to the state standard the entire process of organizing a switched connection in a single MU can be divided into four components: initial state, establishing the connection, holding the connection, and disconnection.

1. Initial state. The initial state from which one can make a transition to the stage of establishing a connection is characterized by a starting telegraph signal at points a' and a" of duration not less than 1000 ms in the AT and PS networks and not less than 2000 ms in the PD-200 network ("Initial state" signal, position 1 in the figure).

2. Establishing the connection. At the beginning of making a connection station A sends a "Call" signal over circuit a', a rest message of duration not less than 150 ms (position 2). This signal appears at point b" with a shift t_z, which is caused by the time for propagation (delay) of signals during their transmission over the telegraph channel. In order to protect from so-called "wrong numbers" due to noise station B should not set as a "Call" the rest messages of duration less than 70 ms, even if they follow continuously, but with an interval not less than 10 ms. Thus the setting range of the "Call" signal (position 3) is established in the 70-150 ms range, whereas it is more desirable to approach the lower limit in order to reduce the unproductive load on the network.

Station B should send a message of rest polarity with duration of 20-30 ms (position 5) over the b' signal circuit "Confirmation of call" not more than 200 ms following setting of the "Call" signal (position 4). Obviously, this signal proceeds to point a" after delay time t_z. The time of waiting for the "Confirmation of call" signal is set at not less than 3s (position 6) for station A in order to account for the reaction time of station B to the "Call" signal and the delay of signals in both directions of transmission. Therefore the largest permissible value of t_z in the given situation is (3--0.15--0.2)/2=1.3s. This value satisfies all known types of telegraph channels where the delay of signals does not exceed several hundreds of milli- seconds (including the channels formed by systems with time division, and also radio and satellite communications systems). When normalizing consecutive procedures of interconnection the delay time of signals is accounted for in the state standard in a similar manner, therefore we will not dwell on this feature.



Signal diagrams of the interconnection of two stations

Because a change in the duration of the signal "Confirmation of call" is possible during its passage through the telegraph channels because of edge distortions and as a result of regeneration (during utilization of equipment with time division), station A should assure its reliable setting in a wider range of 17.5--45 ms (position 7) in comparison with the transmission range (20-30ms).

Station B should send over the b' circuit the signal "Permission for transmitting the category of subscriber" (position 10) within a 3s time interval after setting the "Call" signal (position 8; exceeding this interval is allowed in 1% of the cases) but not earlier than 100 ms after transmitting the signal "Confirmation of call" (position 9). The signal parameters at point b' and the conditions of its setting at point a" are entirely analogous to the signal "Confirmation of call," however the time of its waiting at station A should be not less than 5 s from the moment of transmission of the "Call" signal (position 11). It should be noted that the described procedure of separate transmission of the signal "Confirmation of call" and "Permission for transmission of subscriber number" is required only when station B is the NT-R or NT-D type. All Soviet stations, by virtue of their inherent characteristics of schematic construction, send to station A a single "combined" signal which carries the functions of both enumerated signals. According to the new state standard the procedure established for the signal "Confirmation of call" should be observed in this case also.

Continued interconnection of stations A and B depends on what code is used for transmitting the signals "Subscriber category" and "Subscriber number."

a) When using a decimal code station A should begin transmission over the a' circuit of the signal "Category of subscriber" (position 13) 30-2000 ms (position 12) after reception of "Permission to transmit category of subscriber" (or "combined" signal); approaching the lower limit of the interval (30 ms) is desirable. At point b" this signal is a sequence from one (category "1"--PS), two ("2" -- AT), three or four ("3" and "4" -- PD-200) messages (pulses) of starting polarity with a pulse coefficient (pulse/pause ratio) of 1.4--1.7 and sequence rate of 9--11 pulses/s.

Station B should assure reliable setting of "Subscriber category" for values of the pulse factor at point b" from 1.2 to 1.9 and rate from 9 to 11 pulses/s (position 14). After reception of this signal station B should transmit over the b' circuit the signal "Permission to transmit the number of subscriber" (position 15) in a 3 s time interval with probability of exceeding 1% (position 16). The signal parameters at point b', the time of its expectation by station A (position 17) and setting conditions at point a" (position 7) are similar to the signal "Permission to transmit category of subscriber."

In the time interval 30--2000 ms after reception of the signal "Permission to transmit subscriber number" (position 18) station A should transmit over circuit a' the "Subscriber number" (position 19), whose value depends on the kind of station B. When establishing connections to all kinds of coordinating stations the number consists of six symbols, for PTS-K substations it consists of two symbols, for the ATK-20 and ATK-20-U it consists of two or one symbols, and for the ATA-MK-2 it consists of one symbol. The signal parameters "Subscriber number" at point b" are entirely similar to the signal "Category of subscriber."

The distance between series of pulses (interserial time) (position 20) for transmission of this signal should be in the 0.2--5 s range according to the state standard.

A narrower interval is given by the specifications for all types of stations and substations, 0.2--0.25 s, however, in order to improve reliability of station interconnection it is recommended that it be in the 0.2--0.3 range. The upper limit, which is established by the state standard (5 s) corresponds to the minimal time until the next series of pulses at station B.

b) Using the telegraph code to transmit the "Category of subscriber" and "Subscriber number" from station A is technically possible if stations A and B are type NT-R or NT-D. In this case "Permission to transmit number" is not transmitted by station B, and both of the above indicated signals are transmitted by station A by the MTK-2 telegraph code according to GOST 15607-76 at a rate of 50 Bauds without an interval between them, after receiving "Permission to transmit category of subscriber" (not shown in the diagram). Station B should assure reliable registration of these signals for edge distortions of messages at point b" up to 40%.

3. Maintaining connections. After transmitting the signal "Number of subscriber" station A should retransmit over the a' and a" circuits all signals which enter from station B as well as from the called and caller subscriber sets. In particular, if the required connection is switched through then the signal "Connection established", a pause message of duration not less than 4 s (position 21) will be produced in circuit a". Beginning at this time stations

A and B are in the mode of retransmitting information signals (telegraph messages), while a connection at an MU should be reliably maintained during retransmission of start messages of duration not more than 300 ms in AT and PS networks or not more than 700 ms in the PD-200 network (position 22).

4. Disconnection. The disconnection procedure consists in that one of the subscriber units (the caller or called) sends the signal "Ring off", which is retransmitted through the loop and picked up by both stations (position 23) with a shift caused by time delay t_2. The range for setting the "Ring off" signal in accordance with the state standard is established in the 300--1000 ms range for the AT and PS networks and 700--2000 ms for the PD-200 network (position 24). Consequently, the "Ring off" signal duration should exceed the indicated upper limits.

Upon receiving the "Ring off" signal over the MU from the opposite station side a given station should respond to its entry by transmitting the signal "Confirmation of ring off" with a delay necessary to set the "Ring off" signal. The duration of "Confirmation of ring off" is the same as for "Ring off", not less than 1000 ms in the AT and PS networks and not less than 2000 ms in the PD-200 network (position 25), and its transmission delay is 300--1500 ms and 700--2000 ms respectively.

After setting the signal "Confirmation of ring off" the station provides for so-called "protective delay," which eliminates the possibility of MU occupation by a new connection in a time frame of not less than 1 ms. The MU initial state is established after the "protective delay" lapses.

5. Failure to pass through. The procedures described above are characteristic of successful calls, which terminate in establishing the required connections. Various situations may arise in an MU for unsuccessful calls depending on the causes of the failure to pass through. We shall examine the most typical cases which have been reflected in GOST 24001-80.

If connections at station B (or other stations, which take part in its connection) are impossible due to business of the connection devices and lines, line damage or mismatching of the address information received and stored in the memory, the respective station sends toward station A word content-free signal (NC, OCC DER, NP) or the pulse signal "Busy" (rest message of duration 165--240 ms, permissible limits at point a" 140--260 ms). Because "Ring off" is always sent after these signals the disconnection procedure of a partially switched loop in no way differs from the one described earlier.

If the signal "Confirmation of call" is missing for 3 s station A excludes the possibility of MU occupation by a new connection, i. e. it blocks the MU (with switching on of the corresponding signaling for the staff) and switches to the procedure of automatic checking of the inoperative MU. These actions should be carried out not later than 10 s following transmission of the "Call" signal, consequently the time of waiting for "Confirmation of call" should be limited to the 3--10 s range, in which operation near the lower limit is desirable.

Automatic testing of the MU in accordance with GOST 24001-80 can occur in two principal versions. A more improved version which is used when station B is the NT-R, NT-D, PTS-K, and ATK-20U type, stipulates transmission of the "Repeat test 2" signal over the a' circuit, which is a prolonged pause message. If the MU transmit direction is impaired (a'→b"), this signal does not advance to station B, consequently there cannot be any response reaction to station B. If the transmit direction is functioning, but the reception direction is impaired (b'→a") then station B reacts to "Repeat test 2" as it does to "Call" and sends the signals "Confirmation of call" and "Permission to transmit subscriber category" (or one "combined" signal), but the latter do not advance to station A. In both cases automatic testing ot station A continues, however, in the second case station B, which does not produce the signal "Category of subscriber" for 5--10 s (waiting time limits), should send the text signal NP or the pulse signal "Busy" with a subsequent "Ring off." If the damage is not eliminated and, consequently, station B does not produce "Confirmation of ring off" it should begin transmitting the signal "Repeat test 3" (a pulse train consisting of pause messages of duration 17.5--80 ms and start messages of duration 4--15 s) in a time interval which does not exceed 15 s after sending the "Ring off" signal. The MU being examined should be marked at station B as damaged before the signal "Repeat test 2" ceases to be received over the b" circuit in order to eliminate nonproductive occupation of the devices. Unlocking the MU and its transition to the initial state at stations A and B is achieved after producing the "Repeat test 3" signal over the a" circuit, which is possible only on the condition of restoring MU functioning.

A second and simpler version of automatic testing of an MU is characterized by transmitting the "repeat test 1" signal over the a' circuit. This is a pulse train consisting of rest messages 10--20 s long and start messages 3--5 s long. This state is preserved to the time of "Confirmation of call" or "combined" signal being produced by station B, i. e. until restoration of MU functioning. In contrast to the preceeding version station B is assigned a passive role here, which in some cases leads to nonproductive occupations of the controlling devices as the "Repeat test 1" signal advances. In order to limit such situations the state standard stipulates that the "Repeat test 1" signals from ATK-MK-2, ATK-20, and ATK-PD type substations not be transmitted at all, because testing the MU from the side of the reference station is more effective in this case.

Other kinds of failure to pass through a signal are possible in addition to the ones described. For example, station A may fail to produce "Permission to send category of subscriber." The waiting time of these signals is limited to the 5--10 s range; operation near the upper limit is desirable. If signals do not arrive in this interval station A should send the "Ring off" signal.

The reaction of station B to lack of "Subscriber number" for 5--10 s is similar to the case described for lack of "Category of subscriber" (transmission of NP or "Busy").

It should be pointed out that several simplified interconnection procedures have been realized for certain types of stations and substations which are used in PS, AT and PD-200 networks. In particular there is no transmission for interconnection in the AT network of ATK-20 or ATK-MK-2 substations with reference stations of a substation during outgoing communications. During incoming communications the "Category of subscriber" signal is not received, for which their is no need. After disconnection station NT-R does not implement "protective delay," because this procedure is not provided with system solutions. These discrepancies were allowed by the state standardization agency during confirmation of GOST 24001-80.

The systems and procedures set forth in GOST 24001-80 are formally disseminated only for interconnection of coordinating stations, however, their observation in PS, AT, and PD-200 networks is obligatory for establishing connections from decimal-stepping stations to coordinated ones and, what is particularly important to note, for connections between electronic stations (TSKS-T, ESK et al.) and coordinated ones. This requires advanced switching systems on the part of the system developers and very strict implementation of the signals and procedures mentioned in GOST 24001-80.

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OPTICAL COMMUNICATIONS CABLES

Moscow VESTNIK SVYAZI in Russian No 9, Sep 81 p 34

[Article by I. P. Maslenkova]

[Text] A regular meeting of the Scientific and Technical Council of the USSR Ministry of Communications was devote to the current state and prospects of the development of optical communications cables. It took note of the extensive scientific research and testing and design work being carried out by enterprises of Soyuzelektrokabel' (VNIIKP and OKB KP [All-Union Scientific Research and Design Institute and the Optical Cable Design Bureau] to develop new types of optical communications cables. Manufactured cables were the basis for developing five cable testing lines of urban telephone networks, which use IKM-30 and IKM-120 transmitting equipment, in 1979 and 1980. Their tests show that the main characteristics of optical cables and the main qualitative indices of the loops meet the requirements set forth for similar systems using copper filament cables.

The scientific and technical council sanctioned scientific and research projects in the area of optical cables and communications systems, which were carry out by VNIIKP, OKB KP AND TSNIIS in the Tenth Five-Year Plan, and it has recommended that the results of this research be the basis for developing the production of optical communications cables. In order to organize their serial output it remains to increase the production rate of quartz intermediate pieces and optical fiber with attenuation factor less than 5 dB/km for wavelength of 0.85 micrometer and less than 1 dB/km at wavelength of 1.3 micrometer, which will assure a wide transmission band of signals, at a rate up to 140 MBytes/s. It is also necessary to organize the industrial output of measuring instruments and develop methods of assembly, assembly parts, reinforcement and tools for connecting structural lengths of optical cables between themselves and the equipment.

Additional study of optical cables will be done in the area of developing optical cables with gradient fibers, with single-mode fibers, attenuation reduction and inclusion of the 1.3--1.6 micrometer wavelength range, and performance characteristics stability, etc.

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GOVERNMENT AGENCY, FIRMS COOPERATE IN TELEDATA TEST

Copenhagen BERLINGSKE TIDENDE in Danish 11 Jan 82 p 2

[Article by Per Sabroe]

[Text] In March 40 telephone subscribers in Lyngby will get terminals hooked up to their TV sets that will show news, timetables and prices in local stores.

The teledata test that is being conducted by the telecommunications agency and the three big telephone companies is starting 2 years of trial operation. There will be 40 private terminals in Lyngby and 60 in Skanderborg and Silkeborg and every 6 months these 100 sets will be moved so the test will reach 400 different customers in all. The same thing will be done with 75 terminals being set up on a rotating basis in private business firms around the country. In addition teledata terminals that can be used by many people passing by will be set up in 25 public places, such as the library in Lyngby.

The test is a Danish affair, B & O [expansion unknown] built the terminals and Chr. Rovsing the two computers that will guide the flow of information.

Appetizer for Newspapers

Recipients will be able to get information about travel plans--DSB [Danish State Railways] timetables and prices and in Lyngby information will also be available on HT [Capital District Traffic Company], SAS, Swissair and Spies & Tjaereborg. News will be shown that is sent to Danish newspapers, Gutenberghus and the periodical INGENIOREN. Publishers and bookstores can give titles and resumes of books, banks and savings institutions can provide interest rates and information on loans and exchange rates and finally retail stores will play a large role with information on products and prices. Participating are Irma, Daells Varehus and Magasin as well as several shopping chains.

At Teledata superviser Jorn Orsnaes said that experience abroad shows that such things as brief news summaries led to increased newspaper sales. That happened in Birmingham where people hurried to the nearest news stand to read more about something they had seen mentioned on teledata.

Public institutions will also make a contribution with information from libraries, the State Information Service and others.

Recipients can control the flow of information themselves because the system will be given key words so that one can tune in the specific information desired. "Take a family that wants to buy a specific brand of vacuum cleaner. They can see at home on the screen the prices in five different stores so they don't have to run all over town looking for a bargain," said Jorn Orsnaes.

"But in several firms teledata has already produced greater efficiency. The Agricultural Council wanted to use the trial period to send out recipes including agricultural products but experience in several countries has shown that agriculture in particular can benefit from teledata since some of the consultant services can be provided by encoding instructions that farmers can read on their TV sets when they need good advice."

After a trial period of 2 years a report will be made to the Danish Media Commission among others and then a political decision will be made as to whether to introduce a permanent teledata-news service in Denmark.

6578
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LOCAL CITIZENS GROUPS ORGANIZE TO OPERATE LOCAL BROADCASTING

Copenhagen BERLINGSKE TIDENDE in Danish 11 Jan 82 Sec II p 1

[Article by Solveig Basse]

[Text] They all want to speak out. Break the monopoly of Danish Radio. Several thousand people all over the country are involved in and represented by 80 groups that have applied to the Ministry of Cultural Affairs for broadcasting time and money to operate local radio or TV.

There is an infinite diversity of intentions, goals and groups--business organizations that want to talk about the conditions of business life. Homosexuals and lesbians who want to advise their colleagues, religious sects that want to spread the joyous Christian tidings. Towns that want to transmit everything from church services to town council meetings and sports contests. A union that is already prepared to make programs in its highly professional TV studio in the SID [Semi-skilled Workers' Union] trade school in Svendborg. Cultural groups that want to activate the inhabitants of Roskilde with good advice from RUC [Roskilde University Center] students. An antenna society consisting of four landowner associations which has already sent four broadcasts on local conditions but stopped when they heard that a similar project in Praesto had been reported to the police.

A technician from Danish Radio borrowed video equipment free of charge from the Sony Company in return for allowing himself to be photographed in the local press. And after a little fiddling around with changing the cables in the antenna mast Sweden 2 sent local programs from Vipperod. At the moment they have stopped while they were ahead but as soon as the ministry's permit arrives they will broadcast local soccer games and entertainment programs and political debates.

Trial Period for 3 Years

Like the 79 other applicants they are glad the Ministry of Cultural Affairs has opened up the 3-year trial period approved by Folketing in the spring for local radio and television experiments. Cultural Affairs Minister Lise Ostergaard is now working to get the 6 million kroner needed to produce a test model that will select who will receive grants and for how much. Not all applicants can expect to be approved.

Svendborg School--the property used for SID courses--is one of the many applicants wishing to produce local TV. The school already has a TV studio fully equal to TV City. It is used in training union deputies. A committee led by union chairman Hardy Hansen is currently working on a strategy so they won't be standing there with no goals the day the permit comes from the Ministry of Cultural Affairs.

Svendborg School principal Mogens Larwen said: "All we lack is a transmitter which costs between 80,000 and 275,000 kroner but we have only applied for broadcasting time to start with. We are already working with educational institutions and schools in the area. We won't exclude certain groups but it is obvious that union movement interests will be dealt with. We want a daily TV news program with news and orientation on political and cultural events in Svendborg and vicinity."

Thirty Groups in Roskilde

The Seventh Day Adventists in Ringsted would like to send local radio programs. The pastor of the local parish with 117 members, Arne Sandbech, said: "We want to convey the Christian message in an accessible way, preferably through songs and music. We are emphasizing health programs, a kind of lifestyle program. We would like to help all those people who are out of balance. Many need help. We want to teach people to find the positive things in their lives, teach them to accept themselves and each other, teach them to communicate and listen, for then life suddenly becomes more positive.

"We hope to be allowed to broadcast twice a week but before we get a permit we won't plan anything practical or acquire technical equipment. We have not asked for economic assistance yet."

But Roskilde Radio has asked for 900,000 kroner for technical equipment, space rental and free lance workers. The local cultural council in Roskilde stands behind the radio initiative. This involves 30 groups, for example the Rimfaxe theater, the literary cafe and music and choral societies. Several university students at RUC have set up a study course as part of their education and have trained six local people as radio producers. Robin Cheesman, associate professor at RUC, said: "Local radio is not an end in itself but only a means that will activate the citizens to take part in local activities in the areas of politics and culture. Radio reporting should give people an interest in attending the theater and political meetings, to join music and choral societies themselves."

Area Smaller than a County

One of the applicants in Copenhagen was the 1948 League, which applied for 2 hours of broadcasting time, according to one of its members, Kurt Nielsen. "We want to broadcast for half an hour on Tuesdays and Thursdays and these would be rebroadcast the following mornings. It is hard for homosexuals and lesbians to get coverage in the press and especially on Danish Radio. We want a tape facility so that all interested members can produce broadcasts."

The local radio and television stations are not supposed to compete with the local programming of Danish Radio and therefore they can only cover an area that is smaller than a county.

6578
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DENMARK

CULTURAL AFFAIRS MINISTER: LOCAL BROADCASTING WILL START

Copenhagen BERLINGSKE TIDENDE in Danish 17 Jan 82 p 3

[Article by Solveig Basse]

[Text] Testing of local radio and TV will now begin. Official application forms are currently being sent out to more than 150 interested parties who will be assigned broadcasting time if their projects are approved by the Ministry of Cultural Affairs' local radio and TV committee.

This will happen even though Thorkild Simonsen, chairman of the National Association of Municipalities and the Value-Added Tax Fund, told party colleague Lise Ostergaard at a meeting yesterday that she would not be getting the 3 million kroner from the Municipal Value-Added Tax Fund for local radio and TV tests that the minister had been hoping for since last February. Instead Thorkild Simonsen offered the cultural affairs minister good advice. Advice that was quite in line with the minister's own proposals, she said. And which therefore will now be put into practice.

This means that broadcasting permits will now be issued to the local radio and TV projects that are either financed privately or that are paid for entirely by individual communities or are financed jointly by the state and the local municipality. This last provision means that groups that approach the Ministry of Cultural Affairs with a promise of municipal support back home can also apply for state assistance.

That leaves the group of applicants whose requests of assistance are turned down by their primary municipalities and can't come up with the necessary funds on their own. And it is here that critics, among them the chairman of the Folketing Cultural Affairs Committee, Ingerlise Koefoed, SF [Socialist People's Party], charge that the idea of local radio and television broacasting falls flat on its face. Because local communities can either totally or partially reject applications from groups with deviating opinions that don't suit the municipal council.

But Cultural Affairs Minister Lise Ostergaard is hoping that the Municipal Value-Added Tax Fund will help here.

Thorkild Simonsen said the fund would discuss the matter at a committee meeting in February and that some money would probably be appropriated but not the whole municipal support of 3 million kroner that is a condition for the release of the 3 million kroner earmarked by the state.

Cultural Affairs Minister Lise Ostergaard said: "I had hoped to get the entire 3 million kroner from the tax fund due to the geographical distribution of the radio and TV tests and the programmatic and technical diversity. It would have been more honest of the tax fund to say in the first place that they wouldn't do this instead of these procrastinating replies with an increasingly negative tone which the Cultural Affairs Ministry has been receiving after sending out several reminders. But I still think we will get a sizable amount of support from the Value-Added Tax Fund."

After the 2-month application period expires the ministry's committee on local radio and TV will review the applications according to certain criteria. Not all applications will be granted. The first local radio and television stations won't actually get going before spring. But it will be a lengthy process for the interested groups who must either fight for funds from their municipal council or--if their requests are rejected--come up with the money themselves.

6578
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PHONE COMPANY CHIEF DISCUSSES DIGITAL TECHNOLOGY, EXPORTS

Copenhagen MANEDS BORSEN in Danish Jan 82 pp 57-62

[Interview with administrative director for Jutland Telephone R. V. Relsted by Per Thygesen Poulsen]

> [Text] The Jutland Telephone Company has acquired a reputation for being first. Not just in Denmark but also on an international scale. When international telecommunications firms want to look into the future they visit the headquarters in Slet near Arhus. Here we met the man with the visions, the administrative director of Jutland Telephone, civil engineer Richard Vagn Relsted, 66, who told us that the future is much less remote than most of us think.

[Question] Isn't it dangerous for the business sector to anticipate developments?

[Answer] No. The fantastic thing is that for the first time in the history of the world one can describe what is happening in electronics, what will happen in 2 years, in 5 years.... The only thing we don't know is how good we will be at making use of these things. What I find so incredible is that since integrated technology was discovered in 1960 it has been possible to double the number of circuits per silicon chip from year to year with the result that as early as 1980 it was possible to place a million circuits in such a chip. And this development will continue in the 1980's. This means in short that around 1990 we can make a microprocessor with a billion components and this in turn means that we can make incredibly powerful computers at very low prices.

[Question] Does this mean that uses previously considered too expensive will now be within reach?

[Answer] Even today it is so cheap that no one has been able to utilize all the possibilities because we're not fast enough or competent enough to develop the software.

[Question] What gives a telephone company a central position in this development? Is that something that should be obvious?

[Answer] In reality it is obvious for telecommunications, the transfer of signals between people, should be accomplishable at a low price because the energy required is so little. While the existing centrals require a lot of electricity to link up the subscriber network the digital centrals we will get in the next 5 or 10 years will use very little electricity.

[Question] And that leads automatic telephone companies into computer development?

[Answer] Here in Denmark we have been lucky enough to be so much ahead that we could decide before anyone else did that from now on we would only buy digital technology. And we have obtained prices that are unique throughout the world. We're a good demonstration platform!

[Question] Is that true of Jutland Telephone in particular or does it apply to the Danish telecommunications companies in general?

[Answer] We may have been the boldest but the others are keeping up quite well.

[Question] Doesn't being a pioneer lead to problems?

[Answer] That is part of the deal. After all we're trying to play ping-pong with the big guys and once in a while they shake their heads. I can mention here the telephone apparatus we made, the one we call 76 E.

[Question] The one manufactured by Kirks Fabrikker?

[Answer] Yes, but that was in a joint venture with us, we were the ones who started it. But the minute something has to be produced a factory comes into the picture and if it hadn't been Kirks it is unlikely we would have carried out the project, it needs a man who can see the possibilities.... But the daring manufacturer is rewarded for his boldness today. Actually that was the first telephone apparatus totally developed in Denmark and it's almost impossible to name a place where it is not sold. It is in production in the United States, it is in production in France, it will soon come into production in Australia.

[Question] Yes, but why is Jutland Telephone the "bold" one?

[Answer] Not just Jutland Telephone but Danish telephonics which have a leading position around the world. The cheapest rates. A more advanced network than anywhere else. Per thousand subscribers we use fewer employees than anyone else in the world. A few years ago a team from Bell in the United States came to visit us and we could not resist the temptation to ask what they wanted with a little company like ours. "Well," they answered, "we have some people who keep an eye on who is in front."

We've been first with many things. For instance it was natural for us now that we have developed a keyboard apparatus to make it standard equipment while elsewhere people have to pay a high surcharge for getting it.

It has really been that way for many years, it is not something new we have invented. Back in the 1950's when transistors came out we developed a semi-electronic central in cooperation with Kirks Fabrikker.

[Question] Wasn't that before you became director?

[Answer] I became deputy director in 1958. And along with Philips we had a fully electronic central operating in Arhus for 6-7 years. We were the first with the cable plow; at the end of the 1950's we had between 800,000 and a million telephone poles, many of them rotten--it is unbelievably expensive to correct breaks in such a system so we could see we would have to put the network down in the ground. And when one can formulate such a need one has colleagues who can invent the plows that are needed. They were invented by our Holstebro district chief at that time and his colleague who is the current district chief in Holstebro. In other words our efforts to improve techniques go back a long way.

[Question] But don't you as a concessionary company belong to those we expect in advance to be slow, hemmed in by weighty systems and regulations?

[Answer] Telephone companies and perhaps especially this one because it was located so far out in the country have the great advantage resulting from the fact that the concession holders placed some people on the boards of directors, an excellent mixture of bureaucrats, politicians and private businessmen. And this has meant that we had a free hand as long as things went well. Now for quite a few years we have had profits of between 1 and 1.5 hundred million kroner and that makes it easy to come to a board of directors and ask for money to develop new products even though they may occasionally smile at our technical enthusiasm.

[Question] That must mean on the other hand that you have been fairly successful in reaching your goals with the developments that have been started without ever having wasted the investments.

[Answer] We knew we had to be extremely down-to-earth. When we see what the big concerns use we can't compete at all. Our only chance lies in finding solutions that lie on a level we can pay for.

One of our philosophies has been that a lot of telephone materiel was too expensive and too clumsy. That is one of the reasons why we made a PABC [expansion unknown], a little telephone central we call Novomaten. But because developments go so quickly we have had to further develop the PABC. In this particular case it has been practically a one-man show, carried out by a young and very talented engineer. He has developed a product we call Alpha 1. I believe that in 3 or 4 years a million of them will be sold all around the world.

[Question] And what is it?

[Answer] It is operated by microcomputer, of course. One can hook up as many as four central lines to it and one can have up to 16 telephones which can also make connections among themselves.

[Question] The problem must be to be economically practical and visionary at one and the same time.

[Answer] When I came to work for Jutland Telephone it was a poor shabby telephone company, quite a contrast to KTAS [Copenhagen Telephone Company]. The first 10 years of my life here were spent in an effort to make it economically stronger. At that time two-thirds of the employees were telephone operators and district supervisors and I could see that operated traditionally the company would never become financially strong. But if we could expand the line network and especially institute immediate service on the long stretches where it is profitable the money would start rolling in. And therefore we introduced direct dialing all over Jutland along with the first automatic central in Arhus in 1955, we really introduced the system before we had the technology. And the Arhus subscribers didn't care about the poor network and dialed direct so we had to transfer the telephone operators to the administration with lightning speed. We put a lot of emphasis on not just throwing people out in the street. With the next central, that was Skive, we introduced the system without automating by using metered billing with technical equipment we developed ourselves which brought connection time for intercity phone calls down from around 90 seconds to around 10 seconds.

[Question] And the employees accepted that without making a fuss?

[Answer] We had such good relations with the unions. And in response we promised reductions would only occur in step with natural attrition. We saved millions, you know, corresponding to perhaps 20 million kroner annually today in the entire region.

In reality it was simply strategic planning. I feel we have had such great conditions that if other firms had had things the same way Denmark could have knocked out Japan with regard to economic growth.

[Question] Could we still do it?

[Answer] Yes, we certainly can! That is the exciting part of it. We're ahead now and Danes are very strong in this new technology. There is a multitude of new possibilities in the telecommunications area and we have the advantage of having a telecommunications network that is ahead of the others. So if we only had a government that was willing to give a little more leeway in regulations, well then....

[Question] Yes, but isn't the case that the government is more likely to tighten its grip?

[Answer] I won't comment on the political aspect but it seems crazy to me to set up a Telecommunications Council on which the telephone companies aren't represented at all. I feel there is a risk that we will destroy the incredible possibilities that exist.

[Question] What possibilities?

[Answer] Merely what one might call the shift to new technology will mean such a dramatic reduction in costs for telephone companies after 1985... If one had a government that thought strategically it would make sure telephone companies had permission to give dividends so stocks came up to a rate of 100 and stock capital could be expanded. KTAS should have a stock capital of 1 billion and we should have a stock capital of three-quarters of a billion kroner.

[Question] In other words, go out on the stock market in search of money?

[Answer] Yes and then we could get along entirely without borrowing abroad and in a few years we could pay off our debts. It is quite expensive to set up telephone systems, you know.

Another thing is that the new digital technology involves a much greater capacity than we have had in the past. Within a few years we could establish a digital telephone connection between two subscribers and in reality a digital connection is a data transmission line that can transfer 64,000 bits per second. An enormous capacity. Take telefacsimiles. Today we can send a standard sheet of paper in 3 or 4 minutes. In the digital network it will take only seconds.

At the same time we have obtained a new transmission medium in the form of light-conducting cables developed by Nordic Cable and Wire. We have reached an agreement with them to buy 3 years of production and use it in the network. If our 5-year plan is allowed to run we will have a substantial part of our long-distance network with these light-conducting cables within 5 years and they have such a fantastic capacity.

The same is true of lines established via telesatellite and radio links. For example in a short time contacts between Denmark and Greenland will be expanded by a large number of telephone lines as well as by ten channels via telesatellite and radio links.

[Question] What does that mean?

[Answer] It could mean for example that by using an audio and video channel via satellite someone could perform an operation in Greenland while an expert at the National Hospital supervised the operation on the screen and offered good advice. Or one could establish what the English call an "open university" of students in classes spread around Greenland, each with a teacher and contact with the main university and with telephone and picture contacts between classrooms.

[Question] Without costing an arm and a leg?

[Answer] The price is surmountable and it will be reduced further in the years ahead.

We already use our ordinary telephones for teleconferences but with the new technology one can send picture transmissions and if desired people could send whole books to each other with telefacsimiles. With these conveniences it is realistic to believe that 20 percent of all travel activity could be eliminated to the advantage of both parties.

[Question] Will we then all be able to get in touch with each other in all these ways or must we have special equipment of the same type?

[Answer] At the moment not all equipment is compatible, as they say. But the telecommunications authorities are trying to standardize things so that in the future this will be possible. The telephone network is no problem, of course. The question involves the language a machine transmits and whether it can be received by another. That will be solved by 1990.

[Question] In just 8 years, in other words?

[Answer] Yes, but things are going so fast. Now for example we have had bids on the new digital intercity centrals. And we have discovered that within the next 5-year period we could actually replace 80 percent of our intercity centrals. It wouldn't even pay to expand the existing ones even if they are adequate because it is cheaper to acquire something new instead.

And now we are developing a digital concentrator together with B&O [expansion unknown], a piece of electronic equipment that makes it possible to establish 30 connections on two lines in the existing network, enough to serve several hundred subscribers. I believe the new concentrator could cover up to 600 subscribers and if we use one we could offer each firm a connection with the digital network. When one is hooked up one can transmit 64,000 bits of data to all the others who are hooked up with the system.

[Question] Traditionally a telephone company provides only telephones and lines but Jutland Telephone delivers terminal equipment and is into Cable TV, for example.

[Answer] We have been working on Cable TV for many years. But when one begins to use light-conducting cables one can't avoid transmitting Cable TV programs, there's so much room. Personally I believe that long before the year 2000 we will have a nationwide Cable TV network with a large number of programs.

[Question] Does that mean that legislation on the TV monopoly must be changed?

[Answer] When TV satellites come anyone can get a parabola antenna, a little dish, and receive signals from the satellites. But that would disfigure houses and communities.

[Question] It could be prohibited.

[Answer] Creative people will always be able to find a way of getting around the law.

[Question] Who will supply all these possibilities?

[Answer] The only thing we are thinking of doing is supplying the lines. The programs are something we think can be taken care of by universities, cultural people, papers, all those capable of presenting messages of one kind or another.

We are testing teletext along with the postal system. And I don't think many years will go by before it will be impossible to buy a television set that lacks the chip needed to receive teletext. I don't believe in the big mechanism where a big council sits and decides, but I do believe that any firm that wants to can establish its own entry where people can just tune in and get information. For example if MANEDS BORSEN provides a service where one can see all the new books on company management that have been published and it's smart enough not to limit the references just to its own publications I think such a service would be widely used. And I firmly believe this would lead to sharp sales increases for those providing such services.

[Question] But would it be economically feasible to provide such information?

[Answer] To be quite honest with you I think most of the services that ought to come should not be paid for. For instance if I am going to Helsingor I should be able to tune in and find out which connections are best and what the ticket costs. The profit has to come from the ticket sales not from the sale of information. That would probably have some effect on newspaper ads; it's easier to give precise information via a computer than through an ad.

It seems to me that it would benefit all the travel agents who went in on a mutual booking service. And you have to realize that the service is quite cheap. A computer with the memory needed for this use would cost between 100,000 and a quarter of a million kroner around 1990 even for a relatively large firm. And when you consider what you have to pay for all kinds of other things, that's cheap.

[Question] And is it something you could sell?

[Answer] It doesn't necessarily have to be us. What I am dreaming of is that what we call the terminal and computer market will be freed so that private firms can supply equipment. Today we have a so-called model policy which means that the telecommunications authorities, in this case the Postal and Telegraph Service, supply what is necessary for sending data over the lines. One pays quite dearly for this. But the way electronics technology is going, within 2 years it will only take a chip, something that costs 50 kroner, that you put into the terminal. That means that Danish firms could also have tremendous opportunities if the market is freed. We must be allowed to work on an equal basis with the others. And then I feel that in no time at all we would have a lot of producers who could go out on the markets. If one makes a system that is good in Denmark it will also be good abroad.

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BRIEFS

PARTICIPATION IN COMMUNICATION SATELLITE PROGRAM--The Hague, January 21--The Netherlands will proceed with its European Space Agency (ESA) partners in developing L-Sat communication satellites, Economics Minister Jan Terlouw told parliament last night. He said in a letter to both chambers of parliament the Dutch cabinet had agreed to further Dutch participation in the L-Sat programme at its meeting on December 18. The Dutch contribution of about 135 million guilders for the years 1981 through 1982 would be charged to his ministry's budget, he added. The first L-Sat will be launched in 1986. Holland's main partners in the project are Britain, Italy, Canada, Belgium, Denmark, Spain and Austria. The Dutch share in the project is 11 to 12%, he said. The Dutch Fokker aerospace company and Hollandse Signaal Apparaten, a Philips subsidiary, take part in the building of the L-Sat while the Netherlands Broadcasting Foundation (NOS), the general post office (PTT) and Philips have shown interest in using the satellite. Development of the advanced L-Sat was described by Dr Terlouw as an effort to keep abreast of rival developments in the United States, Japan, the East European countries, France and West Germany. Dr Terlouw said he was optimistic about the prospects of L-Sat satellites. He expect some 10 to 20 of them would be sold. [Text] [The Hague ANP NEWS BULLETIN in English 21 Jan 82 p 1]

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LM ERICSSON INTRODUCING NEW TELECOMMUNICATIONS PRODUCTS

Stockholm SVENSKA DAGBLADET in Swedish 12 Jan 82 p 26

[Article by Johan Myrsten]

[Text] Following a few jolts, the merger between Datasaab and parts of LM Ericsson has now taken shape. The result will be new products combining telecommunications, data processing, word processing, and so on.

Since 1 January, Ericsson Information Systems Corporation (EIS) has included all of Datasaab with one exception. That is the air control systems, which have been transferred to another Ericsson company, the SRA [expansion unknown]--which incidentally once participated in laying the foundations for Stansaab and the air control systems.

Also included are two previous divisions of LM Ericsson: one for subscriber equipment and the other--only 1 year old--for information systems.

All told, the EIS comprises the following units and products:

1. Communications systems: Under the leadership of LM Ericsson's Rolf Eriksson, this division will be responsible for the electronic private automatic branch exchanges (PABX's) that are already on the market under the name of ASB, with 20, 100, or 900 stations. A new digital PABX is the MD-110, which handles both speech and data transmissions over the existing telephone system. The MD-110, to which the EIS attaches great importance, was developed by Ellemtel in cooperation with the National Telecommunications Administration.

A new communications system is known as Eripax. It is a data network that can connect data processing centers and computers of different makes.

A local data network has been christened Eribus, and a "gate" in that network is called Erigate. A new system for handling messages on both telex and teletex is called Erimail.

In addition to the various networks, the line of products also includes modems and other items that were already being carried. Modems are boxes that convert data signals for transmission over the telephone system. In this field, however, the competition is "devastatingly tough."

2. Business systems: Headed by Gundor Rentsch, this division--originally the old Datasaab Division of Saab-Scania in Linkoping--develops bank terminals (over 30,000 installed to date), minicomputer systems (Series 16) and automatic teller machines, and such things as retail systems for service stations (known as Autotank).

3. Alphascope: The Alphascope display terminal--Stansaab's and Datasaab's old best-seller from Jarfalla (70,000 installed)--holds 20 percent of the entire European market for such terminals. The market is expected to grow by 25 percent annually. Office functions such as word processing will be added to the current functions. The head of this unit is Lars Fossum.

4. Terminals: Under the leadership of Rolf Granstrom, this unit will develop terminals that can handle voice, data, and text transmission at the same time. Eritex is the name of a teletex terminal that the customer will be able to use for word processing as well. (Teletex is a faster, electronic version of Telex.) Also belonging to this unit is the latest family of telephone sets--the Diavox 100, with its various push-button arrangements and applications--as well as credit card terminals. Farther in the future, there will be combinations of telephone and electronic know-how.

Other units of Ericsson Information Systems will include the unit for business development under Lars Remqvist. That is where the more long-term projects will be developed, examples being integrated information systems that will interconnect separate products from the EIS, data systems, software, consulting services, and so on.

A large portion of the production itself is continuing outside the EIS in plants belonging to other parts of the Ericsson group. On that point, organization is not yet clear.

The EIS has capital stock of 360 million kronor. Managing director Hakan Ledin's second in command will be Sven Skareus from Datasaab.

More Than Telephones

The gauntlet has been thrown down.

LM Ericsson is entering the battle for the future "paperless office" in earnest and challenging big firms such as IBM, Xerox, and Olivetti.

By 1990, office automation is expected to be as big a market for LM Ericsson as the telephone exchange market.

A revolutionary facelift will be in store when the 106-year-old LM Ericsson Telephone Corporation enters the arena where the world's electronic, data processing, and office giants will be fighting it out during the 1980's.

New competitors are joining old familiar names like ITT, Philips, and Siemens. The clientele is widening from a small number of telephone monopolies to a large number of firms and government authorities. The line of products is being filled out with new electronic office equipment such as data communications exchanges and display terminals, and farther in the future there will also be data processing consulting services and complete information systems.

Important Step

An important step in that big effort was taken at the start of the year. At the same time that the entire concern changed over to calling itself simply Ericsson--without the LM--a subsidiary known as Ericsson Information Systems (EIS) was set up. Under that name, the subsidiary Datasaab will merge with those parts of the Ericsson concern whose sights were already set on the office market. LM owns 90.5 percent of the EIS, and 9.5 percent is owned by the National Telecommunications Administration's subsidiary, Teleinvest.

Ericsson Information Systems is expected to have sales of about 3 billion kronor this year (with the former Datasaab accounting for about two-fifths of that). If the EIS retains its current share of the market, the turnover will be four times as great--or 12 billion kronor--in 1990. That is how fast LM's new market is expanding, with growth (in volume) estimated at 15 percent per year. But the goal is to increase the company's share of the market.

In order to cope with that vigorous expansion, the newly formed company will have to hire thousands of new salesmen. If total sales amount to 12 billion in 1990, a total of 4,000 qualified salesmen will have to be hired during the 1980's. The net increase in sales staff will be somewhat less than that, since personnel turnover amounts to about 20 or 25 percent per year.

The EIS currently has about 3,900 of the Ericsson group's total of 69,000 employees.

The development of Ericsson Information Systems is laid out more like a 5-year-plan than anything else.

At the end of 1980, 90.5 percent of the Swedish data processing industry's biggest problem child--Datasaab--was acquired. The remainder is held by the government, which used to own 50 percent, through Teleinvest.

At the same time, a new division for information systems was established within LM Ericsson.

Since 1 January 1982, the whole new venture has been combined in the new subsidiary known as the EIS, which also includes LM's division for subscriber equipment (telephone sets, private branch exchanges, and so on).

By the time 1982 is half over, the EIS will have organized separate sales companies. The sales organization is regarded as a bottleneck and as the key to success on the new market.

In 1982 and 1983, a number of new products will be put on the market under names such as Eritex, Eripax, and MD-110.

At the same time, a portion of Datasaab's big variety of products will be weeded out.

The EIS will show a loss in 1982, but by 1984 at the latest, the operation will be making a profit.

Around 1985, the EIS will achieve its goal and live up to its name. That is when it will be possible to tie all the separate products together in complete computerized information systems, and the firm will become a systems supplier.

Systems know-how is precisely LM Ericsson's strong point, in the opinion of Hakan Ledin, managing director of the EIS. As assistant managing director for the entire Ericsson group, he has been a very strong force in the new venture, and now he also has formal responsibility for seeing that all the hundreds of thousands of kronor plowed into the EIS yield a return.

In the Lead

"We believe that we have the lead in systems technology.

"Our assessment is that information systems will become more complicated than the data processing firms imagined," says Hakan Ledin.

LM Ericsson acquired its systems know-how partly while building up the AXE-type computer-controlled telephone system around the world, and that know-how may be needed. Because LM is taking on powerful competitors.

The background to the entire new venture is the technical development within electronics. Hakan Ledin illustrates the process by drawing three circles. At one time the circles merely grazed each other. Now they are slipping increasingly inside each other. The circles symbolize three industries which all foresee good or very good growth. The first is telecommunications, where LM is one of the leading companies; the second is data processing, where IBM dominates; and the third is office automation, where Xerox and Olivetti, among others, are big names. As the technology for those three industries becomes increasingly indistinguishable, new competitive conditions arise.

Competitors

Hakan Ledin says: "The firms in the other two industries have greater marketing know-how, but we probably have greater systems know-how. It certainly sounds a little presumptuous to say that IBM has no systems know-how, considering the resources it has. All the same, IBM has not concentrated so heavily on communications systems."

Hakan Ledin says that IBM is the strongest competitor. But Xerox will also become a very tough competitor for the EIS because of its concentration on communications know-how.

Another giant firm cropping up in the competition is American Telephone and Telegraph (AT&T), whose nickname is Ma Bell. When the AT&T's monopoly on the U.S. telephone system was being broken up, a part of that concern--Western Electric and Bell Laboratories (sometimes known together as Baby Bell)-- was picked out to enter the competition with IBM and others in the market for information technology.

Hakan Ledin comments: "AT&T is a tremendously big organization, and it has always been a monopoly. Monopolies have not always come up with the most competitive solutions and the most advanced products.

"AT&T and IBM are very big, but we are small and can find more than one niche. Besides, AT&T is now opening up to competition in its fields. We may find tremendously fine possibilities for business if we watch ourselves."

Strategies

Ericsson Information Systems has established a number of strategies for its venture. The concentration strategy says that the EIS will direct its efforts toward products, systems, services, groups of customers, and countries "where sound and profitable business possibilities exist." The strategy for capturing a share of the market says that the goal for each combination of product, country, and group of customers should be to win from 20 to 70 percent of the market. The strategy for new products says that new Ericsson products will be compatible with the old equipment and that the products will be modular--that is, the customer will be able to buy a single piece of equipment and later expand his system gradually.

Another link in the strategy is the continued acquisition of other firms. The big acquisition to date is Datasaab, which brought such heavy losses for its previous owners. The consolidation with LM Ericsson is going well, claims Hakan Ledin.

"The advantage is that the two companies complement each other to a large extent. People in both firms accept the idea that we will follow the same path together."

A weeding out of Datasaab's product line is imminent. Hakan Ledin says: "Such a small company cannot sell 30 or 40 different printers at the same time, to take one simple example." The scandal surrounding the smuggling of components to the Soviet Union was "the most unpleasant discovery" for LM. Another discovery was that there are inventories of unsalable products that will have to be scrapped.

"Datasaab's activity in the United States was considerably worse than we had reason to believe earlier. But as far as products and technology are concerned, we fit in with each other better than we expected at the beginning."

Expensive Alternatives

Hakan Ledin says that even if Datasaab represents a loss for the EIS to begin with, it should be viewed as an investment. The alternatives would have been either to develop, on its own, the products that Datasaab has or to buy out another firm. Either alternative would probably have been more expensive.

The risk and big investment that LM Ericsson is now undertaking through Datasaab and in other ways must also be viewed in light of the fact that the concern "is coming out of the 1970's in a very strong position," emphasized Hakan Ledin. Money from the sale of AXE systems and especially the giant order from Saudi Arabia "is ticking in," and the work there is going well.

Ledin says: "Suppose we are forced to pull out of certain parts of the new venture: I believe we can afford to lick our wounds, even though it would naturally play havoc with our capital."

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SWEDEN

BRIEFS

LOCAL RADIO BROADCASTING QUALIFICATIONS--SVENSKA DAGBLADET has learned that according to a proposal being submitted to the Law Council today by the government, local radio will be expanded, but there will be stricter requirements for associations that want to broadcast. The stricter requirements will mean, for one thing, that associations wanting to make local broadcasts will be required to have been in existence as associations for at least 1 year. And their chief activity will have to consist of more than just producing programs for local radio. The new rules may mean the end of about 10 of the 400 local radio associations now in existence. This may be the case, for example, with "Open Forum," which on several occasions has been reported to the attorney general for making threats against immigrants. Continued participation in local radio by "Open Forum" may founder on the grounds that the association does not engage in any activity other than its broadcasts. There has been considerable disagreement on whether local radio should be made permanent. The Liberal and Moderate Coalition Parties have supported its expansion. The Social Democrats are opposed, and the Center Party is split on the issue. [Text] [Stockholm SVENSKA DAGBLADET in Swedish 14 Jan 82 p 1] 11798

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